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NATIONAL PETROLEUM NEWS

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Cleveland Oil Man Claims Patent Control Of Use of Soaps in Ford Oil

By Paul Truesdell
N. P. N. Staff Writer

CLEVELAND, April 2

EDSON L. CANNON, president of the Warren Refining & Chemical Co., of Cleveland, is the owner of a patent that covers the blending of a soap base with mineral oil to make a non-chatter Ford oil.

He has signed a contract with the Standard Oil Co. of New Jersey giving that company a license to make, use and sell a non-chatter oil under the patent in consideration of a large cash payment. He has also brought suit against a large company in the east which is manufacturing so-called Ford oil base, that is aluminum stearate, charging infringement of his patent and this company is now negotiating with him with a view to settling out of court.

Several other companies that are making and selling a non-chatter oil compounded with aluminum stearate or some other soap base, have been notified by Mr. Cannon that they are infringing his patent and he is awaiting their action. He is now installing a laboratory in his plant in Cleveland. He plans to employ a chemical staff and make a close analysis of every Ford oil that is being offered to the public to determine which of them are compounded with soap. All the companies making and selling such soaps will be asked to take out a license under his patent.

THE Warren Refining & Chemical Co. has been compounding and selling Ford non-chatter oil under this patent since 1921 but has never made the base for sale to jobbers and others to be compounded with the oil by them. He plans now the construction of a plant to manufacture the base, aluminum stearate, for sale to jobbers, who if they buy the base from the Warren Chemical Co., will thereby, of course, be licensed to make and sell the oil.

The patent upon which Mr. Cannon bases his claims is U. S. No. 1,414,311. It was issued to Daniel M. Sorenson, April 25, 1922, having been applied for one month earlier. It was immediately assigned to Mr.Cannon. The explanation of the cause of chattering is thus given by the inventor in the patent:

"As is well known to those familiar with the operation of such bands (Ford transmission bands) the lubricants ordinarily employed therewith will, under the influence of the heat of the motor and that due to the friction, produce a carbon residue which will form a hard, glazed deposit upon the bands and their cooperating braking surfaces. The presence of this hard glazed deposit causes the brake bands, when applied, alternately to grip and to slip upon the cooperating surfaces, producing what is known to the trade as 'chattering' of the bands."

THE three claims of the patent are as follows:

"1—The process of treating the brake bands of planetary transmissions to prevent the chattering thereof which consists in applying to and between such bands and their co-operating parts a lubricant comprising a base of neutral mineral oil having a soap mingled therewith.

"2—The process of treating the brake bands of planetary transmissions to prevent the chattering thereof which consists in applying to and between such bands and their cooperating parts a lubricant comprising a base of mineral oil having a viscosity of from 200 to 300 and having a soap mingled therewith.

"3—The process of treating the brake bands of planetary transmissions to prevent the chattering thereof which consists in applying to and between such bands and their cooperating parts a lubricant comprising a base of lubricating oil having a soap mingled therewith."

Mr. Sorenson was for years one of the chief mechanics of the Ford organization, Mr. Cannon said, and during the early days, was a driver of racing cars for Ford. He is now a Ford dealer in Toronto. A great deal of effort was spent in the Ford plant to eliminate the tendency of the bands to chatter, but without success.

Mr. Sorenson discovered along in 1916, according to Mr. Cannon, that the addition of a soap to the oil would prevent the chattering and he used such a compound in his own cars for several years before applying for a patent.

In 1921, even before the patent was issued, Mr. Cannon, having made a deal with the inventor, began the manufacture and sale of a non-chatter oil under the trade name of Warco. Aluminum stearate was the agent used by Mr. Cannon but the patent seems to cover the use of any soap. The soap was made by saponifying stearic acid, a product of tallow oil, with alum. Considerable difficulties were met with in compounding the oil on a commercial scale but they were all overcome.

Within a few months of the appearance of Warco, several other companies began putting non-chatter oils on the market, Mr. Cannon says.

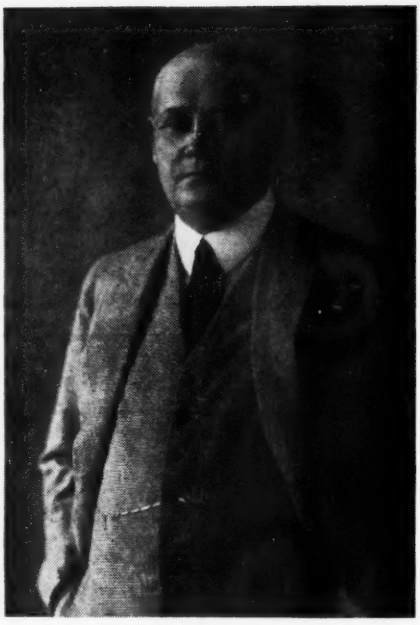
THIS tendency has grown until today there is hardly an important company in the business that is not offering the Ford driver some sort of special lubricating oil for his car. The Tide Water Oil Co. was one that along about 1922 put on a very extensive newspaper advertising campaign to sell the public

on a special Ford oil, which, it is understood, used an animal oil base. Many other companies use animal oils as a blending base.

Oil technologists say there are three chief ways of compounding non-chatter oils. One is by the use of a metallic or other soap; one is by compounding the mineral oil with varying proportions of animal oil such as lard or neatsfoot; and the third is by adding to the mineral oil a small percentage of a fatty acid such as stearic or oleic acid.

The use of soap as a compounding agent is apparently covered by Mr. Cannon's Patent No. 1,414,311 and the use of fatty acid is covered, it is understood, by the Wells-Southcombe "germ theory" patents, the American rights to which are owned by the Marland Refining Co.

In 1925 Mr. Cannon was approached by attorneys who asked him to put a price on his patent. They did not disclose what company they represented. Mr. Cannon refused to sell. Early in 1926, the same group again sought to buy the patent but again were met with refusal. Last fall, Mr. Cannon consented to give a non-exclusive license for making, using and selling the product during the life of the patent for a substantial sum.



EDSON L. CANNON

Only after the deal was closed did he learn that he had made the contract with the Standard of New Jersey. This company some time last summer brought out a new type of motor oil which is understood to be compounded with a soap and it was quite likely to save themselves from possible trouble from Mr. Cannon's patents when the oil was used in Fords that the Standard of New Jersey was anxious to get the patents. This new oil was described in National Petroleum News, July 14, 1926 issue, page 23.

It will be seen from reading the patent claims that the use of a soap-compounded oil is covered only for use in Fords, or in cars using planetary transmissions.

Mr. Cannon is well known in the oil business, especially in the marketing end, having been for 23 years head of the Warren Refining & Chemical Co., which specializes in the manufacture and marketing of special lubricating oils and greases, the latter making up about 75 per cent of its business.

American Oil Men's Association Ready With Program

CHICAGO, Apr. 4

AMERICAN Oil Men's Association, 624 South Michigan ave., is ready to receive the oil men who will attend the annual convention at the Congress Hotel, April 12, 13 and 14.

The program is complete, the exhibit spaces are all sold and all the white space in the souvenir program has been paid for by persons and companies wishing to extend their greetings.

The first speaker on the program is Phil Grau of Milwaukee. He is the only man in the list who is not an oil man. His subject is "Organization and Cooperation". Mr. Grau is a widely reputed orator and platform speaker. Until recently he was associated with Marquette University. He will take the platform after lunch on Tuesday, the first day of the meeting. He will be followed the same afternoon by C. B. White, division manager of the Vacuum Oil Co., Chicago, on "Building for the Future."

There will be no forenoon meetings, and nothing is scheduled on the program for the first night. The second meeting will be at lunch time Wednesday. The first speaker of the second session is Robert Bruce White, of Valvoline Oil Co., Chicago, who will talk on "Motor Car Lubrication." He will be followed by J. W. Gerwe on "Modern Merchandising at the Filling Station". Mr. Gerwe is a Vacuum Oil Co. man whose work has brought him in close touch with service station sales all over the country.

The regular banquet and ball will take place Wednesday night at the Congress Hotel. The Thursday afternoon program is considered the most attractive of all because of its variety and the probability of discussions that may develop for mutual enlightenment. There will be three short addresses by Chicago oil men, each on a different subject, and time will be given after each talk for discussions from the floor.

C. O. Beroth, Acme Petroleum Co., Chicago, will be first with a discussion of "Arbitration of Disputes between Refiners, Marketers and Jobbers."

L. A. Stewart, Atlas Petroleum Co., Chicago, is second in order. He will talk about "Standardization of Specifications on Domestic Furnace Oil."

THE third speaker of the day is John Stumpf of Henry H. Cross Co., Chicago, who will discuss "Outage Tables and Calculation."

There will be a total of 36 exhibits in the show room, one fourth of which will be oil exhibits. Nine refiners have reserved space in the exposition room as follows:

American Oil Corp., Jackson, Mich., Booth 18.
Cosden Sales Corp., Tulsa, Okla., Booth 36.
Galena Signal Oil Co., Houston, Texas, Booth 22.
Marland Refining Co., Ponca City, Okla., Booth 10.
Roxana Petroleum Crop., St. Louis, Mo. Booth 13.
Sinclair Refining Co., Chicago, 11., Booth 34.
The Texas Co., New York, N. Y., Booth 12.
Vacuum Oil Co., Chicago, Ill., Booth 28.
Tide Water Oil Sales Corp., Chicago, Booth 11.

One unusual feature of the exhibit is the fact that none of the patrons of the show took more than one space. All spaces were not the same size but all were of conventional dimensions and there is one exhibitor for each space. The 27 equipment exhibitors are:

Automobile Rotary Lift Co., Chicago, Booth 17.
Bennett Pumps Corp., Muskegon, Mich., Booth 21.
Boe Manufacturing Co., Minneapolis, Booth 4.
Bowser, S. F., & Co., Fort Wayne, Ind., Booth 19.
Butler Manufacturing Co., Kansas City, Booth 2.
Champion Pneumatic Machinery Co., Chicago, Booth 25.
Davis Welding & Manufacturing Co., Cincinnati, Booth 24.
Dempster Mill Manufacturing Co., Beatrice, Neb., Booth 15.
Globe Manufacturing Co., Battle Creek, Mich., Booth 16.
Guarantee Liquid Measure Co., Rochester, Pa., Booth 7.
International Harvester Co., Chicago, Booth 8.
Kewanee Safe Co. Kewanee. Ill., Booth 14.
Leader Iron Works, Decatur, Ill., Booth 5.
Martin & Schwartz, New York, N. Y., Booth 6.
McDonald, A. Y., Manufacturing Co., Dubuque, Ia., Booth 26.
Merit Oil Equipment Co., Cleveland, O., Booth 29.
Milwaukee Tank Works, Milwaukee, Wis., Booth 20.
Moore & Kling, Boston, Mass., Booth 33.
Oil Products Appliance Co., Maywood, Ill., Booth 23.
Perfection Manufacturing Co., Minneapolis, Booth 32.
Pyrene Manufacturing Co., Newark, N. J., Booth 35.
Quincy Compressor Co., Quincy, Ill., Booth 30.
Rhodes, Jay B., Co., Kalamazoo, Mich., Booth 27.
St. Louis Can Co., St. Louis, Mo., Booth 3.
St. Louis Pump & Equipment Co., St. Louis, Booth 1.
Shotwell Pump & Tank Co., Indianapolis, Booth 31.
White, Edward, Sales Co., Chicago, Booth 9.

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Pipeline to Corpus Christi From McCamey, Texas, Proposed

Staff Special

HOUSTON, April 4.

CONSTRUCTION of a 10-inch pipeline, 400 miles long from the McCamey, Tex. district to ocean terminals at Corpus Christi, was forecast today in connection with the underwriting by J. P. Morgan & Co., of $25,000,000 in 10-year, 5 per cent gold debentures of the Humble Oil & Refining Co.

Announcement of the underwriting, which was made from New York, contained this statement:

"The proceeds of these debentures will be used in providing funds for the construction of additional pipeline facilities in the Panhandle and west Texas areas, and for the construction of a trunk pipeline of 40,000 barrels daily capacity from McCamey, Upton county, Texas, to Corpus Christi, on the Gulf coast, a distance of about 400 miles."

The distance to the Upton-Crane county development area, for which McCamey is a base, is about 170 miles nearer to Corpus Christi than it is to Gulf coastal terminals of the Humble's existing pipeline system on the Houston ship channel.

WITH the completion this spring of the Humble Pipeline Co's. facilities out of the Panhandle territory to connection with its previously existing trunk system South from the Ranger district, its network of crude oil outlets will serve virtually all producing areas in Texas. The present west Texas system of the Humble, with 40,000 barrels capacity daily from Kemper, Reagan county, to connection with the trunk line at Comyn, Comanche county, is also connected with the Crane-Upton area by an 8-inch lateral.

Upon completion of the proposed McCamey to Corpus Christi line, which may be considered probable as soon as increased production in the west Texas salt basin justifies actual construction, the Humble will have outlet facilities from the various fields of Texas for upwards of 200,000 barrels of crude daily.

No confirmation of the Humble's plans for future building is to be had further than the statement that preliminary surveys for the new system will be made immediately and that construction work will depend upon production in fields of the west Texas salt basin.

The Morgan announcement of underwriting says:

"The company (Humble) will covenant to make payments of $1,250,000 semi-annually, beginning Oct. 1, 1927. Each payment is to be applied to the purchase for retirement of debentures, if obtainable at or below 100 per cent and accrued interest, within four months after the receipt of such payment, or thereafter to the purchase for retirement of the company's 10-year 5½ per cent gold debenture bonds due July 15, 1932, if obtainable at prices not exceeding such as will yield a 4½ per cent net return."

Government Files Brief In Patent Club Suit

By Special Correspondent

WASHINGTON, April 4.—Attorney General Sargent to-day filed the government's brief with the special master in chancery, in Indianapolis, who has taken the testimony in the cracking process anti-trust suits brought by the government against the Standard Oil Co. (Indiana), Standard Oil Co. (New Jersey), The Texas Co., and the Gasoline Products Co., as primary defendants and the licensees of the primary defendants, as secondary defendants. The brief is a volume of about 600 pages setting forth the facts and the propositions of law which the government contends prove that the oil companies are and have been violating the anti-trust laws by means of the cross licensing, based on the combined patents owned by the Patent Club.

Oral arguments before the master will probably be made in May. The federal court for the northern district of Illinois referred the case to the master. His duty will be to recommend a judgment and decree for the court to make and enter.

Hearings were begun in May, 1925. Nine thousand printed pages of testimony, largely expert opinion, were taken. The hearings were finished in New York last December.

In its petition the government prayed for a decree adjudging that the cross-licenses among the more than 50 defendants was an unlawful monopoly and an attempt to monopolize interstate and foreign trade and commerce in cracked gasoline. The suit covers agreements in respect of some 200 "alleged patents" to use the language used in the brief, owned by the Patent Club. In its announcement about the filing of the brief, the Department of Justice said the "patents purport to cover processes and apparatus for the production of gasoline by breaking up or 'cracking' the more volatile hydrocarbon compounds." The government also contends that the license agreements restrict the territory in which gasoline may be made and sold by the licensees and limit the quantity of gasoline that may be produced by the licensed refiners.

The oil companies, particularly the so-called primary defendants take the position that the combination is justified under the patents issued by the patent office and that the cross-licensing was necessary to avoid infringement litigation.

Coming Meetings

Petroleum Division American Chemical Society, Richmond, Va., Apr. 11, 12, 13, 14.

American Oil Men's Association, Congress Hotel, Chicago, Apr. 12, 13, 14.

National Petroleum Association, Riverside Hotel, Cambridge Springs, Pa., April 28, 29.

Association of Natural Gasoline Manufacturers, Mayo Hotel, Tulsa, Okla., May 24, 25, 26.

West Virginia Oil Marketers Association, Kanawha Hotel, Charleston, W. Va., June 15, 16.

Standardization Conference, American Petroleum Institute, Broadmoor Hotel, Colorado Springs, Colo., June 15, 16, 17.

Earlsboro is Extended to the Northwest

(By Telegraph)

TULSA, April 5.—One of the most important wells in the Seminole district in recent weeks, the Phillips Petroleum Co.'s No. 3 Damar, in the Earlsboro pool, is making 95 barrels per hour.

It effects an extension northwest from the discovery, in spite of an intervening dry hole which was considered to cut off the pool in that direction.

The well is in the northwest corner of the southwest of southeast of 9-9-5. The same company drilled a failure offsetting to the north the Gypsy's discovery, but the new well, one location west and one north of the failure, puts a different appearance on Earlsboro.

Top of the Wilcox was found at 4317 feet and it was drilled in six feet. The discovery well had top of sand at 4274 feet.

Magnolia Petroleum Co.'s wildcat east of the Earlsboro pool in the southeast of 11-9-5, about three quarters of a mile east of the discovery of Earlsboro, has been deepened six feet and is making 170 barrels per hour. It previously was making about 40 barrels.

CHICAGO, March 25.—On April 15, Tidewater Oil Sales Corp., will release its spring newspaper advertising campaign, in 248 daily papers well distributed over the United States. There will be eight "ads" of 350 lines each, aggregating 686,400 lines of newspaper advertising. The ads will run one each week for two months. Two of them will be addressed to women and three to Ford owners.

Problem of Burning Acid Sludge Appears Solved at Barnsdall Refinery

By J. C. Chatfield
N. P. N. Staff Writer

TULSA, April 2.

THE problem of burning acid sludge from its cylinder stock agitators apparently has been solved by the operating staff of the Barnsdall Refineries, Inc. At the present time approximately half of the current production of sludge is being burned under stills as a liquid in combination with heavy fuel oils. Preparations are being made to install additional equipment which will make it possible to burn the entire production of sludge.

The method of preparing the fuel now being used successfully consists briefly of mixing equal parts of heavy fuel and sludge with small quantities of alkaline chemicals at controlled temperatures and keeping the mixture agitated for a period of time sufficient to reduce it to a smooth, free flowing oil virtually free from solid particles. The method is the invention of two employees at the plant, W. D. Kinkade and C. J. Baugh, who have obtained a patent on the process.

W. D. Kinkade, left, and C. J. Baugh who discovered the method now used at the Barnsdall plant of putting acid sludge in suspension in pressure tar and heavy wax distillate

WORK on the problem of burning acid sludge at the Barnsdall plant was begun about two years ago. It was undertaken almost as much to permit easy disposal of the sludge as to obtain the benefits of heat which could be obtained by burning the material. For many years sludge has been accumulating adjacent to the refinery until its disposal has become a real problem involving considerable expense. At present, for example, the company is building a dyke around the sludge dump to keep the old accumulation from spreading over any greater part of the refinery property.

The first success in burning a mixture of sludge and oil was obtained as the result of a special burner invented by James W. Booth, mechanical engineer at the Barnsdall plant. The burner was designed primarily to provide a steady flow of small quantities of fuel which might contain particles large enough to clog up the ordinary needle valve.

Without the burner it would be possible to feed a mixture of sludge and oil containing some lumps if a very large fire was to be used and virtually no control exercised over the quantity of fuel fed into the combustion chamber.

MR. BOOTH designed a burner with a small orifice and a valve stem which could be adjusted to regulate the flow of fuel to any desired quantity. He was thus able to keep stills and boilers at the critical temperatures demanded. The feature of his invention is the method by means of which he was able to avoid clogging of the needle valve. This was accomplished by keeping the valve stem constantly moving backward and forward through a space of about 1/16 of an inch from the fuel outlet orifice.

The plunger valve stem in Mr. Booth's burner is cut square across so that its edges serve somewhat like cutting tools to break up solid particles in the fuel. The fact that it moves backward and forward permits rather large particles to pass through without permitting a heavy flow of oil.

The valve stem is free to rotate as well as move longitudinally. The rotating action is obtained by means of a paddle wheel type of rotor set into the fuel circulating line. The wheel is turned by the impact of the fuel being circulated to all burners.

LONGITUDINAL movement of the valve stem and rotor is obtained by using an eccentric cam moving in a fork. As mentioned above, this moves the stem alternately backward and forward rapidly through a distance of about 1/16 of an inch. Mr. Booth filed an application for a patent on his burner on Sept. 24, 1925, and the patent was granted recently. Manufacture and distribution of the burner has been taken over by the Max B. Miller Co.

With the aid of Mr. Booth's burner it was found possible to burn a mixture of acid sludge and fuel oil providing the mixture was kept at a temperature of around 100 degrees F. with the aid of steam coils and the liquid was kept moving through a belt line and thoroughly agitated in the fuel supply tank.

Any material deviation from these conditions caused the sludge to drop out of the fuel oil and created a good deal of trouble. Conditions surrounding the burning were somewhat similar to those which have been encountered by operators of Dubbs cracking plants who have installed belt fuel lines connected with flash tanks to burn heavy residuum. The main requirement is care in operation that the fuel is kept hot and kept moving.

EXPENSE caused by the necessity for constant agitation and constant application of heat has been eliminated by the Kinkade and Baugh invention which serves to put the sludge in suspension in heavy fuels for what appears to be an indefinite period.

One sample of a mixture of sludge and oil was shown the writer which was prepared more than five months ago. The sample has been kept in a bottle at ordinary room temperatures without agitation and shows no signs of precipitation of the sludge or formation of hard lumps. Under the old method a few minutes without heat and

agitation would cause sludge to drop out and require cleaning of the fuel tank with pick and shovel.

Equipment for making the fuel-sludge mixture consists of a steam jacketed mixing kettle such as is shown in the accompanying drawing. The kettle is equipped with a propeller type paddle wheel operated by an electric motor which sets up a circulating motion such as is indicated by the arrows in the drawing. The kettle has a conical bottom and the propeller directs a stream of oil and sludge towards the bottom.

THE fuel oil being used to mix with the sludge at the present time is a mixture of pressure tar from the Cross cracking plants and heavy wax distillate butts from the lube plant. The mixture of pressure tar and wax distillate as it reaches the mixing vat has a gravity of 20 to 22 degrees A. P. I.

When a cylinder stock agitator is brought down and a new batch of acid sludge is ready for mixing, the operators pump into their kettle about 70 barrels of the fuel oil mixture which is brought up to a temperature of about 125 degrees F. and the mixing propeller is started up. The operators then add about 300 pounds of hydrated lime to the fuel oil and a small quantity of 3 to 5 gravity soda ash solution which is pumped from the slop oil treating tank.

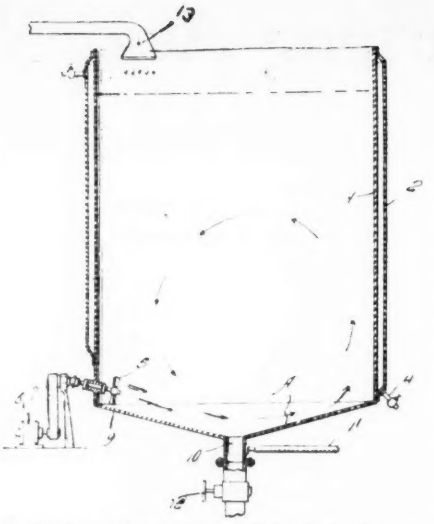
When the two chemicals have been added to the fuel oil, a pump is started to bring in the acid sludge direct from the agitators. The line from the agitator to the mixing kettle is steam jacketed so that the sludge will not drop below 150 to 160 degrees F. before reaching the kettle. Any large sized lumps in the sludge are trapped out in a large strainer attached by a flange union to the pump in line indicated by No. 13 in the drawing.

The acid sludge is added gradually until the mixture becomes rather thick. At that point more fuel oil is pumped in and additional quantities of lime and soda ash solution are added before the last of the sludge enters the kettle.

At the present time 200-barrel batches of fuel are being made up. The mixture contains about 50 barrels of pressure tar from the Cross units, 50 barrels of heavy wax distillate and 100 barrels of acid sludge. To this is added from 4 to 8 per cent of soda ash solution and about 600 pounds of lime.

It will be observed that the alkaline chemicals added are not sufficient to neutralize entirely the acid sludge. The chemicals set up a reaction in the mixing kettle which raises the temperature of the oil and sludge and serve to keep the sludge in suspension in the oil.

At present, mixing kettles are being used which do not have a steam jacket. The reaction of the chemicals brings the mixture up to around 170 to 180 degrees F. In laboratory experimental work it has been found, however, that the sludge mixes with the oil more quickly and goes into what



Vertical section drawing of kettle to be employed at Barnsdall plant for mixing acid sludge with fuel oil

appears to be permanent suspension if the temperature is raised to around 200 degrees F.

It is for this reason that the new mixing installation to be installed will have steam jacketed kettles so that the temperature can be maintained at the critical point throughout the mixing period.

Operators at the Barnsdall plant have found that the process of mixing oils and chemicals in the kettle requires from one and a half to two hours. After the mixture is complete it has been found desirable to agitate the mixture from two to three hours longer until it becomes a smooth, homogeneous mass without a grainy appearance.

TOLEDO, O., March 31.—Sun Oil Co. has sold to the Oko Oil & Gas Co., Lima, O., 300 oil wells, 200 miles of pipe line, pumping stations and two 55,000-barrel tanks in northwestern Ohio. It is said the Sun refinery here will not be affected by the sale as it receives most of its crude from the Mid-Continent. Production from the 300 wells averaged about 100 barrels daily.

Doesn't Need Fire Rules

(April 13th Issue)

One veteran refinery executive says he has no special fire rules, except no smoking in the refinery.

He has rigid operating rules, however, which are complied with. His theory is that if all refinery operations are properly carried out there will be no fires to worry about. He would seem to be right about it because in nearly 10 years of operation of a 5000-barrel plant he has never had a fire that caused any property damage or injured anybody seriously.

The April 13 issue of National Petroleum News will have a story about this man, his refinery and his method of operating it.

Drilling Being Pushed At Seal Beach

LOS ANGELES, April 4.—Efforts to bring about agreement among drilling operators at Seal Beach, in the town lot area, to either slow up operations or shut down entirely, were without result, and as the week closes probably 65 strings of tools are running in the town lot or Alamitos Heights end of the new field. Production in this end of the field should be around 30,000 barrels, daily average, in six weeks, as it is possible to complete a well in less than six weeks.

Three wells are on production in the Alamitos Heights area at the close of the week, with a daily production of about 7500 barrels, with four or five at stages where it is possible to complete them next week.

Several pipe lines are building into Seal Beach. Julian Petroleum started this week to build a six-inch line into the field. The Richfield line runs through the field and can easily cut in. General Petroleum is to build a line and during the past week Pan American completed a six-inch line into the field. It is thought the Standard will also build into the field, although no announcement has been made. The Associated is expected to extend its line also.

Under the new crude price posting Seal Beach production is worth only 90 to 94 cents a barrel, and, at this price, it is expected tanks will be put up and much of its production stored for better prices.

The slash in crude prices this week had been expected, but the actual amount was more than had been counted on. Most producers feel the Standard would have been justified in announcing a cut more than a month ago.

There is considerable activity in the Richfield district in Orange county, where several more-than-fair wells have been completed the past month, and new wells are starting practically every week. This is also true of Brea Canyon field, but field activity is slowing down elsewhere.

In the northern fields, where the production is heavy, and where the price ranges about 75 cents, with no cut in price this week, very little drilling is going on. In fact, it would not be surprising if more of the small pumpers would be shut in.

Present shut-in production of the state is about 60,000 barrels daily and another 10,000 barrels could be shut in and the loss be welcome to the state.

Vacuum Opens Ohio Branches

CLEVELAND, April 2.—Vacuum Oil Co. began distributing its lubricating oils in Ohio through its own organization April 1. Heretofore Vacuum oils had been distributed by the Standard Oil Co. of Ohio. Branch offices have been opened in Cleveland and Cincinnati. Warehouses will be established in principal Ohio cities.

Lower Freight Rates in Southeast Sought by Oil Companies

By A. E. Heiss
N. P. N. Staff Writer

WASHINGTON, April 4.

TWO lines of attack by the oil industry for lower railroad rates on its products developed in the Interstate Commerce Commission's general hearing this week on oil rates.

As a result of testimony brought out by traffic heads for both western and Atlantic Coast refining companies participating in the hearing, the suggestion may be made to the American Petroleum Institute that it seek, on behalf of the industry generally, a lowering of oil rates on the ground that oil products are not in reality the dangerous commodities to transport that the roads have maintained for so long.

Henry C. Keene, attorney for the Sinclair companies, laid down the foundation for such a fight on present rates by his examination of railroad traffic witnesses. He set forth that Col. B. W. Dunn, chief of the Bureau of Explosives of the American Railway Association, in his annual report called gasoline the prime cause of property losses, although, while petroleum products constituted about 85 to 90 per cent of the total volume of so-called dangerous liquids, the property loss caused by it was only slightly more than half the total. The total itself was $1,114,067 for the year, or less than one dollar per car.

Measured by such tests as damage claims filed against the railroads by shippers and by losses the railroads claim to result from oil fires, it was set forth that petroleum products constitute no more dangerous traffic than coal.

IN the course of the hearing, also the program of the oil company attorneys and traffic managers became better defined in regard to rates east of the Mississippi and south of the Ohio and the Potomac. A second line of attack against rates may be the effort to bring about a reduction in rates in this southeastern territory.

At the Atlanta hearing, John E. Monroe, traffic manager for the Pan-American interests, offered a mileage scale to be used in the making of rates. His offer was on behalf of the Pan-American, Mexican Petroleum, Standard of New Jersey, Standard of Louisiana and Standard of Kentucky.

The heart of his proposed mileage scale is rates based on 21 per cent of first class rates which the regulating body is about to prescribe for the railroads in the southeast. The basic rate would be 33 cents per 100 pounds from New Orleans to Atlanta. The rate at present is 42 cents. The 33 cents amount to 21 per cent of the first class rate from New Orleans to Atlanta, first class being the high class merchandise rate.

Twenty-one per cent of first class is much lower than rates in the territory immediately north of the Ohio and Potomac rivers in its relation to the first class rate between New York and Chicago, which is the yard stick in the territory between the Atlantic and Chicago. In cents per 100 pounds for like distances, it may be just about the same.

H. D. DRISCOLL, attorney for the Phillips Pet. Co., Chestnut & Smith Corp., and other natural gasoline interests, alone or in cooperation with other oil attorneys, is going to try for a recognition of natural gasoline as a raw material which was unknown at the time it was agreed that the estimated weight of refined products should be 6.6 pounds per gallon. He says, on the contrary, it is of a weight approximating 5.4 pounds per gallon and that an estimated weight of 5.5 pounds would be proper. He contends it is not related, in a freight rate sense, to refinery gasoline because it cannot be used as a substitute for it and must, if used at all, be blended; therefore, as a raw material, it is entitled to a rate lower than a finished product. Railroads in the southwest have given it such recognition but carriers east of the Mississippi have not, hence this fight by the natural gasoline part of the industry.

Charles Ervin, traffic manager for The Texas Co., was the only oil man who testified during the week. He took the witness stand to give authentic figures about the prices of gasoline on November 18, 1926, in the seven states in the southeast from which the Louisville & Nashville quoted prices gathered by Louisville & Nashville freight agents. Ervin said The Texas Co. had water terminals at Marrero, La., Mobile, Ala., Tampa and Jacksonville, Fla., Charleston, S. C., Norfolk, Va., Baltimore, Md., Marcus Hook, Pa., Bayonne, N. J., Providence, R. I., and Portland, Me. The company, he said, had several hundred bulk stations served from the water front terminals as well as service stations.

In addition, he said the company had distributors some of whom owned bulk stations. In regard to prices and the making of prices, he told the Interstate Commerce Commissioner, in part:

"Prices for gasoline are not determined by any set rule or formula. A number of considerations enter into their determination. These considerations are many and varied. The cost of the product at the destination is always an essential element. The following factors enter into the determination of that cost: the value of the crude oil from which the refined products are derived; the value of each product extracted; the cost of refining, handling and transportation charges.

"Cost, however, is not the only element considered. The competition which the products of the company must meet is a very important element. In all of the territory involved in this proceeding, products from oil produced in states as far distant as California, and in Mexico and South America, are marketed. Large quantities of gasoline, shipped in tank cars from the mid-continent field and from the refineries located in the Pennsylvania, West Virginia, Ohio, Kentucky and Louisiana regions, are being distributed and sold at all times.

"Furthermore, companies operating terminals and distributing stations in the territory are always competing with each other for the sale of their products. This competition is of the most active nature and coming from every direction creates many different problems. It is present, however, and must be met if a distributor expects to sell his product in this territory.

"At times so-called 'distress' gasoline is sold on the market. This surplus product has been and is sold in competition with gasoline which is normally and regularly distributed and sold in the southeast and elsewhere. Companies having investments in that territory, in meeting the competition created by this product, at times must sell their gasoline at a loss in order to retain the markets when the condition caused by the surplusage has passed.

"All factors increasing the cost of gasoline and other refined oils must receive careful consideration before any price can be fixed for a certain territory. No single factor determines the selling price. Generally speaking, competition makes the price, and to an extent that price is influenced by the transportation charges."

The oil attorneys and traffic managers attending the hearing were: T. H. Burgess and W. A. Wareing, Standard of Ohio; Charles Ervin, The Texas Co.;

Frank M. Swacker, C. B. Ellis, and Joseph Beck, Gulf Refining Co.; Henry C. Keene and Harry Robertson, Sinclair Refining Co.; Luther M. Walter, E. D. Sheffe, John E. Monroe and Arthur Stevens, Pan-American, Mexican, and Standards of New Jersey, Kentucky and Louisiana; Charles E. Cotterill and E. Tolley, New Orleans Refining Co.; J. R. Van Slyke and Edward Siebold, Roxana Petroleum Corp.; George H. Graham and W. W. Klingensmith, Transcontinental; James Lawrence, Mid-Continent Refiners Traffic Association and H. D. Driscoll, natural gasoline interests.

Railroad and oil attorneys and traffic managers declared a truce in their fighting on March 31 long enough to hold a party in honor of C. B. Ellis, whom they hailed as the veteran oil traffic manager. Mr. Ellis was 62 years old that day.

Six Railroads to Aid Oklahoma Refiners Fight New Rates

Staff Special

TULSA, April 2

SIX important railroads serving the Mid-Continent field have agreed to join forces with Oklahoma refiners in their last-minute effort to avert increases in refined oil rates ordered by the Interstate Commerce Commission as a result of the 1925 Mid-Continent Oil Rate case. Decision to aid the refiners was reached at a meeting of railroad executives held at St. Louis April 1.

The railroads are the Frisco, Santa Fe, Rock Island, Katy, Kansas City Southern and the Midland Valley. Their officials met in the offices of J. R. Koontz, vice president of the Frisco, with a delegation from Oklahoma including J. C. Denton, vice president of the Mid-Continent Petroleum Corp., W. C. Franklin, vice president of the Tidal Oil Co., and A. C. Holmes, traffic manager for the Empire Refineries, Inc., who constitute a special committee for Oklahoma refining interests.

The railroads and refiners have decided to seek the aid of John W. Davis of New York, former democratic nominee for president, as counsel to aid in pushing the injunction suit which is to be filed in federal court to attempt to nullify the rate order.

Oklahoma refiners, in addition to seeking an injunction in federal court, will ask the Interstate Commerce Commission for the third time to reconsider its decision in the case. If these two avenues fail, they will seek suspension of the proposed rates with an application for an investigation and suspension order from the commission.

THE Mid-Continent Oil Rate Case of 1925 was brought by Kansas City (Group 1) and Kansas (Group 2) refiners who sought a rate differential under Group 3 and other southern manufacturing areas to all territory on and east of the Mississippi. Their fight was opposed by Oklahoma, North Texas, Arkansas and Louisiana refiners. The Kansas refiners won their point, however, in a decision announced nearly a year ago.

When the decision was announced the railroads were given 120 days in which to make the new rates effective. The carriers delayed publishing new rates, however, and refiners in Oklahoma and other sections filed two successive applications for a rehearing which have both been denied. An order was issued requiring the railroads to make the new rates effective by April 20. Since that time the carriers have obtained a delay of 30 days, alleging the work of making up the new rates could not be completed then.

Under the I. C. C. decision Oklahoma refiners will pay differentials ranging from 2 to 7 cents per hundred pounds on refined products shipped to the north. Oklahoma refiners assert that they will not be able to exist in the state under such a handicap. Plants near the Kansas line are considering the construction of pipe lines to the border and loading racks there or the building of short privately owned rail lines to haul their goods into Kansas.

Atlantic Refining Cuts Gasoline

PHILADELPHIA, April 5.—Atlantic Refining Co. today reduced tank wagon and service station prices of gasoline 1 cent in Pennsylvania and Delaware, making tank wagon price 17 cents generally in both states, not including taxes.

Philadelphia was included in the cut, the tank wagon price in the city being 16 cents today, while tank wagon price in the country surrounding is 17 cents.

Last previous change was a 1 cent cut on Feb. 28.

Delaware Gasoline Tax Raised 1c

WILMINGTON, Dela., April 5.—The gasoline tax in Delaware was increased 1 cent on March 19, to 3 cents, with a corresponding increase in gasoline prices.

* * *

Prices in the tank wagon table of this week's issue do not show this tax increase, but will be corrected in the April 13 issue.

Export Kerosene cut ½ Cent

NEW YORK, April 5.—On April 5 Standard Oil Co. of New Jersey reduced prices of kerosene in cases for export ½ cent per gallon. New price of 43-45 water white in the New York export market is 17.65 cents per gallon in cases, and of 42-44 Standard white is 16.65 cents per gallon in cases.

Record Crude Output For February

CLEVELAND, April 2.—The highest daily average production of crude ever recorded was reached in February, when production totaled 67,874,000 barrels, a daily average of 2,424,000 barrels, an increase of 119,000 barrels or 5 per cent over January daily average, and an increase of 100,000 barrels over daily average of December, 1926, the previous record month, Bureau of Mines reports. This increase was due to the Seminole district, which produced an average of about 275,000 barrels daily in February.

February crude stocks east of California were the largest since 1923, increasing 6,500,000 barrels in February, and standing at 285,458,000 barrels Feb. 28. Both light and heavy crude stocks in California decreased in February.

For the first time since July, daily average production of gasoline declined in February, decrease being 7900 barrels under January. Gasoline output totaled 25,024,000 barrels, a daily average of 894,000 barrels, compared with daily average of 901,900 barrels in January.

Gasoline stocks increased 3,656,000 barrels to 49,714,000 barrels.

Kerosene production decreased 650,000 barrels, while stocks gained 460,000 barrels. Gas and fuel oil stocks east of California decreased 1,000,000 barrels. Production of lubricants fell off 220,000 barrels, and stocks gained about 500,000 barrels.

Paraffin wax stocks increased 5,600,000 pounds.

Runs to stills averaged 2,263,000 barrels daily, a figure close to the November, 1926, peak.

Standardization Parley Set for June 15-17

HOUSTON, April 1—Announcement is made from Dallas by J. Edgar Pew, vice-president of the Sun Oil Co., chairman of the general American Petroleum Institute committee on standardization, that the semi-annual standardization conference will be held this year at Colorado Springs, June 15-17, inclusive. Notices are being mailed out by Carl A. Young, standardization director, from the institute's Dallas office.

The general program for the conference, as well as the program for each committee, will be announced later. It may be said now, however, that particular attention will be devoted to the development of codes on recommended field practice for the various types of drilling equipment under consideration.

Secretary Young said that the committee is particularly anxious to receive before the meeting information from purchasers on results obtained from the use of the tentative specifications on belting and wire rope, as additional information is desired before the specifications can be completed.

Operators Are Told That Use of Gas-Lift Is Infringement of Patent

By Lawrence E. Smith
N. P. N. Staff Writer

TULSA, April 4

COURT test of the right of an oil company to employ the gas lift method of producing oil without making arrangements with the patentees of a process is now a probability.

During the past week, attorneys for a number of oil companies that use gas lift in the Seminole District met to discuss the Jones patent. The conference was brought about by receipt of letters, sent by registered mail, from Jones-McLaughlin, Inc., of Los Angeles, calling attention to this patent and asserting that use of the gas lift without license was an infringement. A number of Mid-Continent operating companies received such letters. This is a formality usually preceding court action.

It is understood that in the event of litigation, Mid-Continent companies may cooperate in contesting the suit against any one or several of them.

The firm which owns the patents consists of Philip Jones, the man who obtained a patent in 1914 on "a process of pumping oil wells," and R. P. McLaughlin. Mr. Jones is well known as a natural gasoline engineer. Much of his work has been in California, although for a time he was in the Mid-Continent. He has been associated with various companies, including the Shell, but has spent the past few years in consulting work. Mr. McLaughlin is a geologist, has had extensive experience in his profession, was one time head of the California state mining bureau. The firm offers its services as mechanical and petroleum engineers on gas lift and other phases of oil industry management.

A NUMBER of California companies are licensees under the Jones patent. An off-hand list of the principal ones was given to National Petroleum News by Mr. McLaughlin, who has been in Tulsa for more than a week. The companies named are the Associated Oil Co., General Petroleum Corp., Shell-Union Standard Oil Co. of California, Chanslor, Canfield-Midway Oil Co., Wilshire Oil Co., Marine Oil Co., Union Oil Co. of California and Marland Oil Co.

Some licenses were issued on the basis of 5 cents per barrel of oil lifted by the use of gas. Others were issued on the payment of a flat sum to cover all future use of the process by the company at any place.

Mr. Jones originally had in mind the increase in the recovery of natural gasoline by passing natural gas through the column of oil in a well at the same time lifting the oil. The method has come to be all the rage as a means of lifting oil rapidly and at lower cost than by pumping. The Jones patent, which as said, was issued June 30, 1914 and is No. 1,102,152, says, in part:

"This invention relates to improvements in the method of pumping oil wells by what is now known as the air lift method; and the invention consists fundamentally in provision of means whereby the lighter hydrocarbons which are now carried in vaporous form in the air may be separated and saved instead of being lost as is now the case.

"THE present practice in pumping oil wells by air lift is to force compressed air through an air pipe to the bottom of a tubing or flow pipe in the well and to release the air in the tubing to form a column of mixed oil and air which is lighter than the column of oil standing outside the flow pipe. The column of mixed oil and air is raised and continuous flow is caused by an unbalanced pressure of the column outside the flow pipe. The quantity of air depends entirely upon conditions under which the pump is operated; but in many cases the volume of air far exceeds the volume of oil pumped. This air, being in intimate contact with the oil, takes up a great amount of lighter hydro-carbons, such as gasoline; and when the air escapes to the atmosphere these lighter hydro-carbons evaporate and are lost.

"It is impracticable to separate the hydro-carbons from the air by compression and cooling, as the compression would generate sufficient heat to cause disastrous ignition of the hydro-carbons. I propose to eliminate these difficulties by substitution, for the air, of some gas which will not support combustion of the hydro-carbons, and by the provision of means (including compression) for separating and saving the lighter hydro-carbons.

"One aspect of my invention is that of pumping a well with a gaseous fluid and separating and saving the lighter hydro-carbons which are ordinarily lost.

"Another aspect of my invention is the separation of mixed hydrocarbons into different fractions.

"It will be seen from the following specification that, although I describe my invention as particularly applied to pumping oil wells, yet my invention may be applied to the separation of lighter hydro-carbons from a mixture of hydrocarbons regardless of whether the mixed hydro-carbons are in a well or in a tank or the like."

THEN follows an explanation of the drawing which accompanies the application, which was filed on March 16, 1914, a little more than three months prior to issuance. The drawing shows flow pipe in the well connected to a separator tank from which latter tank the gases are taken to compressor, thence through condenser and into separator. Residue gas is taken from the last separator through pipe leading to the bottom of the well.

"In its more specific aspect," says the patent, "my invention is for the purpose of pumping oil wells by means of the compressed fluid system without the loss of the lighter hydro-carbons. It is this aspect of my invention that I wish to particularly secure to myself in the following claims; it being understood that I do not limit myself specifically to the exact details of the method or the mechanism herein set forth but only to the fundamental steps necessary for carrying on my invention as herein described.

"I claim:

"1. The herein described method of pumping oil wells, comprising the formation of a column of mixed oil and a gas incapable of supporting combustion, the separation of the oil and gas, and the separation of the gas and the vapors carried thereby by means including compression.

"2. The herein described method of pumping oil wells, comprising the formation of a column of mixed oil and a gas incapable of supporting combustion, the separation of the oil and gas, and the separation of the gas and the vapors carried thereby by means including compression and cooling.

"3. The herein described method of pumping oil wells, comprising the formation of a column of mixed oil and natural gas in balance with a column of oil so that the mixed column is raised, the separation of the gas and the vapors carried thereby.

"4. The herein described method of pumping oil wells, comprising the formation of a column of mixed oil and natural gas in balance with a column of oil so that the mixed column is raised, the separation of the gas and the vapors carried thereby by means including compression and cooling."

Charting Sales and Expense Ahead Keeps Marketing Staff on Toes

By J. C. Chatfield
N. P. N. Staff Writer

Article 2

TULSA, March 30

DISCOVERY and prompt elimination of even small profit leaks is of the utmost importance in a large marketing company such as the Cities Service Oil Co., the marketing division of the Empire companies.

The Cities Service Oil Co. operates more than 500 bulk and service stations in 12 states in the western half of the Mississippi valley. The particular territory covered was selected partly because of advantageous freight rates from the plants of the Empire Refineries Inc.

With stations scattered from the Gulf of Mexico to the Canadian border and from the Rocky Mountains to Chicago, W. H. Merritt at Tulsa, general manager of the Cities Service Oil Co., is finding it possible to keep the sales activity and cost records of all divisions and all stations at his finger tips through the operation of the budget system which is used by all branches of the Empire companies as explained generally in the March 16 issue of National Petroleum News.

The first work on the budget in the marketing division is done by the filling station agent and the tank station agent, the men who are responsible for selling Empire goods direct to the public. The first step is in the preparation of and advance estimate of sales of each commodity by months, together with an estimate of the expenses which will be necessary.

Work is begun on the advance estimate about the first of September each year. The station agent is asked to start with his record of gallonage for the past 12 months in making his estimate. Growth in population and prosperity of the community are considered in deciding on any increase in the gallonage estimate over the past sales record.

In the case of tank stations which serve a rural district, the crops just harvested, or about to be harvested, and the price being paid for farm produce will be an indication of the purchasing power of both farmers and town residents during the next calendar year.

PRELIMINARY sales estimates are forwarded to the division manager who compares the estimates of his various agents with their records in the past and with each other. If he does not agree with the agent regarding prospects for business for the new year he calls at the bulk or service station or asks the agent to come in and talk the question over.

The form used by station agents is shown in Fig. 1. It measures 11 by 17 inches, double the size of the standard letter sheet. All other forms used by the marketing division are 8½ by 11 inches and are punched for binding. All other forms bear spaces for only 6 months' figures on a single sheet, two sheets being used for an entire year.

Division managers consolidate the information obtained from the station estimate sheets as soon as they are approved, placing the information on the division advance estimate sheet form shown as Fig. 2. This form bears all the information given by the station agents and in addition estimates of the average selling price and cost of goods handled.

On this form the estimates of gallonage of tank stations and leased service stations is shown separately from the gallonage expected through company operated service stations. The

CITIES SERVICE OIL COMPANY (DEL.) Station_____

Estimate of Station Sales & Expenses for Year_____ Division_____

Gallonage	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	12 Mos.
Gasoline													
Kerosene													
Motor Oil													
Other Lubes.													
Miscellaneous Oils													
Grease													
TOTAL ALL													
EXPENSES													
4020 Salesmens Comm.													
4021 A. Salesmans Sal.													
B. Salesmans Auto Exp.													
C. Salesmans Trav. Exp.													
Salesmans Sal. & Exp.													
4022 A. Truck Exp. Sal. & Comm.													
B. Truck Exp. Operation													
C. Frt. Exp. & Outside Haul.													
Truck, Haul, Frt. & Express													
4023 A. Direct Commissions													
B. Indirect Commissions													
Other Commissions													
4024 Other Wages & Salaries													
4025 A. Other Auto Exp.													
B. Other Trav. Exp.													
C. Utility Service													
D. Stock Shortage													
E. Mis. Sup. & Exp.													
Mis. Oper. Supp. & Exp.													
4026 Advertising													
4028 Development Cost Res. Ded.													
4030 Leased Equipment Maint.													
4031 Truck & Auto Maint.													
4032 Bldg. Grds. & Equip. Maint.													
TOTAL EXPENSE													
Expense Per Gal. Sold													

Approved_____ Division Manager

Approved_____

_____ Agent

Figure 1

expected selling price is shown on a per gallon basis in the second group of items on the form. The unit price then is multiplied by the estimate of gallonage to arrive at a figure for gross income for the division.

An estimate of the per gallon costs of goods delivered at stations is given in the fourth group of figures. These also are multiplied by the gallonage to arrive at a total cost of goods delivered ready for sale. This total cost of goods subtracted from the gross income expected for the division gives a gross spread. Further deductions from the gross spread include warehouse expense, station expense, district overhead and division overhead to arrive at a figure for net earnings for the division.

Since division managers cannot affect general company overhead they make no estimate for that figure. For the same reason station agents take no account of division overhead. The division manager has a separate form on which he gives a detailed estimate of the items which go to make up his own division overhead. This sheet gives an advance estimate of salaries and expenses of the accounting and credit departments, traveling expenses, telegraph, telephone, postage, advertising and the like.

When the service station and tank station agents present their preliminary estimate of gallonage and expense, they file also a requisition covering any major additions, alterations or repairs to their stations which they believe will be necessary during the next calendar year. This requisition must show the necessity for the work, costs of material and labor and when the work should be done.

The division manager looks forward to any expansion of marketing facilities for the next year by preparing a construction requisition to be filed with other advance estimates. This covers either purchase or construction of properties.

On the reverse side of this form the division manager must submit convincing reasons why money should be spent. A typical requisition filed by a division manager gives the cost of the construction contemplated, gallonage expected to be sold, expected overhead, and an estimate of the gross and net profits which he believes will result.

The requisition shows an allowance of 6 per cent for interest on the investment required and calculates what final profits should be on the property recommended.

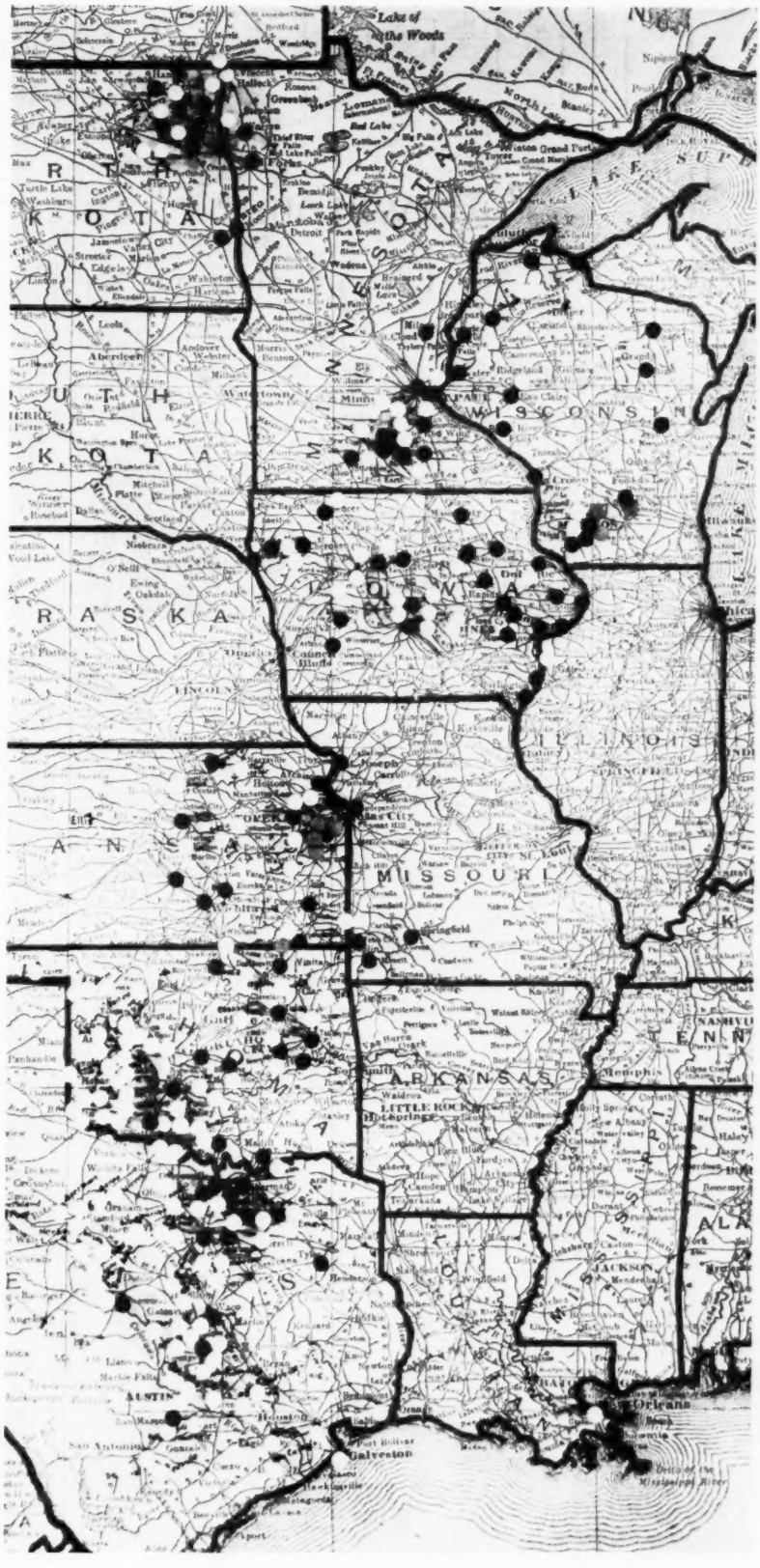
Preliminary estimates from all divisions are assembled at the manager's office at Tulsa into a marketing company schedule which is forwarded to the budget department of the company at Bartlesville. At Bartlesville the marketing company figures are incorporated with those of all other companies of the oil division of the Doherty interests into an overall company budget. This overall budget is used by executives in determining their policies for the coming year.

In their survey of the marketing branch of the business, changes may appear advisable after comparing the estimates of the various division managers. Greater expansion may appear desirable in some sections while in others recommendations for new building may not be approved by the executives. One benefit of the preliminary estimates is to give the executive information which will enable him to fix policies which will fit in with future conditions.

When executives have built up their policies for the next year on the basis of preliminary estimates, these estimates are returned to the sales units for revision in line with the new policies. The final budget estimate is made up and consolidated by the first of December for the year beginning Jan. 1.

One of the most important features of the budget is the follow-up and monthly revision of the advance estimate. The budget department sends the general manager monthly reports showing the amount of goods sold and cost of sales. These reports are distributed to the division managers and down to the agents.

The monthly report of sales on the follow-up is compared with the original advance estimate for the period and space is given for a revision of the former estimate on account of



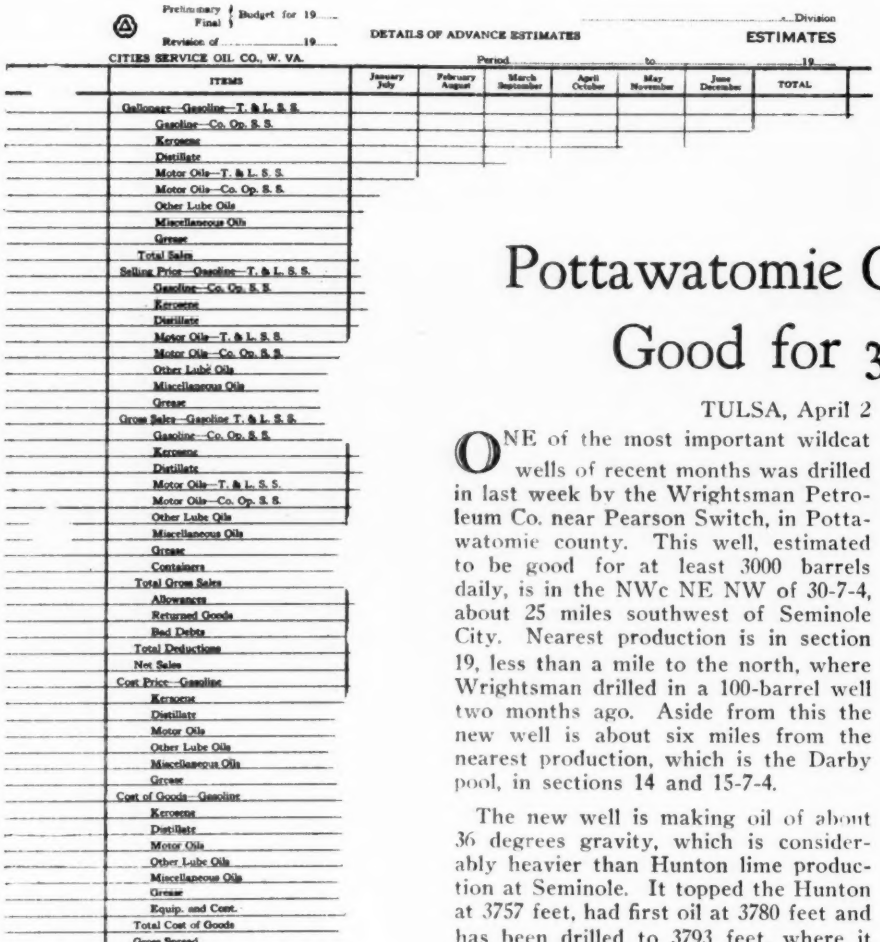
Dots on this map show Cities Service Oil Co. distributing stations.

new conditions which have arisen since the advance estimate was prepared.

Operation of the budget system is not as involved as may appear on the surface. No extra employee is needed in the various division headquarters. The clerical work there is handled by the chief clerk in addition to other duties. The only budget employees needed are those at general offices. The overhead added by the budget department is very small.

One of the most important values of the budget is in the sense of responsibility developed in sub-executives. The average man will examine his work with the aid of the budget, and, being reminded by the monthly follow-up, will seek to make a better record during the next month.

It is an invaluable tool in the hands of the executive in finding profit leaks so that they may be plugged up promptly. It aids in mapping out the road ahead and determining whether present policies should be changed to meet new conditions.



Preliminary / Final } Budget for 19.... ....Division
Revision of ....19....
DETAILS OF ADVANCE ESTIMATES — ESTIMATES
CITIES SERVICE OIL CO., W. VA. Period ..... to ..... 19....

ITEMS	January July	February August	March September	April October	May November	June December	TOTAL
Gallonage—Gasoline—T. & L. S. S.							
Gasoline—Co. Op. S. S.							
Kerosene							
Distillate							
Motor Oils—T. & L. S. S.							
Motor Oils—Co. Op. S. S.							
Other Lube Oils							
Miscellaneous Oils							
Grease							
Total Sales							
Selling Price—Gasoline—T. & L. S. S.							
Gasoline—Co. Op. S. S.							
Kerosene							
Distillate							
Motor Oils—T. & L. S. S.							
Motor Oils—Co. Op. S. S.							
Other Lube Oils							
Miscellaneous Oils							
Grease							
Gross Sales—Gasoline T. & L. S. S.							
Gasoline—Co. Op. S. S.							
Kerosene							
Distillate							
Motor Oils—T. & L. S. S.							
Motor Oils—Co. Op. S. S.							
Other Lube Oils							
Miscellaneous Oils							
Grease							
Containers							
Total Gross Sales							
Allowances							
Returned Goods							
Bad Debts							
Total Deductions							
Net Sales							
Cost Price—Gasoline							
Kerosene							
Distillate							
Motor Oils							
Other Lube Oils							
Miscellaneous Oils							
Grease							
Cost of Goods—Gasoline							
Kerosene							
Distillate							
Motor Oils							
Other Lube Oils							
Miscellaneous Oils							
Grease							
Equip. and Cont.							
Total Cost of Goods							
Gross Spread							
Warehouse Expense							
Station Expense							
District Overhead							
Division Overhead							
Total Expense							
Division Net Earnings							

Figure 2.

Pottawatomie County Wildcat Good for 3000 Barrels

TULSA, April 2

ONE of the most important wildcat wells of recent months was drilled in last week by the Wrightsman Petroleum Co. near Pearson Switch, in Pottawatomie county. This well, estimated to be good for at least 3000 barrels daily, is in the NWc NE NW of 30-7-4, about 25 miles southwest of Seminole City. Nearest production is in section 19, less than a mile to the north, where Wrightsman drilled in a 100-barrel well two months ago. Aside from this the new well is about six miles from the nearest production, which is the Darby pool, in sections 14 and 15-7-4.

The new well is making oil of about 36 degrees gravity, which is considerably heavier than Hunton lime production at Seminole. It topped the Hunton at 3757 feet, had first oil at 3780 feet and has been drilled to 3793 feet, where it was still in the pay. The 8-inch casing was set and cemented at 3765 feet, where the well was standardized and drilled in with cable tools. Tankage not being adequate, the well has produced considerable oil into earthen storage and is now shut in to await either pipe line connections or additional tankage. When on production, the well filled a 1600-barrel tank in eight hours. It is reported the Magnolia Petroleum Co. will connect to the well and run the oil.

This well is remarkable from a geological standpoint in that it entered the Hunton lime in its lowest member, the Chimneyhill limestone. It went directly from the Boggy shale into the Hunton lime. Upper portion of the Silurian, Devonian, Mississippian, and lower Pennsylvanian all were missing entirely. As the well is normally high on the lowest member of the Hunton lime series, indications are good for Wilcox sand production. Wilcox sand production has never been found in township 7-4, nor south of the Wewoka field, 25 miles east of the new well.

Pure Oil Co. has the west offset to the new Wrightsman well and Shaffer Oil & Refining Co. the southwest diagonal offset. Twin State has a lease northeast of the Wrightsman property. Mid-Continent Petroleum Corp. has the north offset and Magnolia Petroleum Co. has an 80-acre lease adjoining the discovery property on the east. Pierce Petroleum Co., which owns a half interest in the lease on which the new well is located has several pieces of acreage in the vicinity, and has made four locations.

One of the Pierce locations is in the NWc NE SW of 30-7-4, another in the NWc NE NE of 25 and a third is in the NEc SE NE of the same section, and a fourth in the NEc SE NE of 25-7-3 just west of the new well.

Wrightsman Petroleum Co. has a one-fourth interest in the lease and one fourth is owned by the Oil Lease Purchasing Association, a Denver concern. The Wrightsman well in section 19, mentioned above, was sold recently to the Magnolia Petroleum Co., together with a block of 400 acres, for $250,000, to be paid half in cash and half in oil. This acreage is in sections 18, 19, 30, and 31-7-4, and 13, 25, and 26-7-3.

A. P. I. to Meet Dec. 6 in New Chicago Hotel

NEW YORK, Apr. 4.—The eighth annual meeting of the American Petroleum Institute is scheduled for Dec. 6, 7, and 8 at the Stevens Hotel, Chicago.

The Stevens is now being built but will open about May 1. Reservations for the annual meeting may be made now by addressing the hotel directly at Michigan Blvd., between Seventh and Eighth streets. The hotel will have 3000 outside rooms with bath. Ample facilities for committee meetings and group sessions, as well as the annual dinner, will be available, according to the Institute.

SPRINGFIELD, ILL., Apr. 4.—A district convention of the Illinois Petroleum Marketers Association will be held at the Nelson Hotel, Rockford, Ill., on Apr. 27, according to G. A. Primm, secretary.

Another Quota Article

THE stimulus of a sales quota to employes was responsible for increasing sales of grease 50 per cent last year over the year preceding for one company operating 600 bulk and service stations in the middle west. Where it used to sell two pounds of grease to every 100 gallons of gasoline, in 1926 it sold three pounds.

This same company this year is giving each station a quota to shoot at on gasoline, kerosene and motor oil sales, as well as grease.

How the plan is worked and results from the first year of operation will be given in another story by Staff Writer Chatfield, appearing in next issue of National Petroleum News.

Co-ops Follow "Will-o'-Wisp" of Big Profits Into Wholesale Distribution

By V. B. Guthrie
N. P. N. Managing Editor

MINNEAPOLIS, March 31

STARTED on the belief, or argument at any rate, that they could bring down the price of oil products to the farming public, present development of the farmers' co-operative oil companies in Minnesota shows how the tendency is for these organizations to extend their activities and duplicate existing distribution facilities. In Illinois something of the same movement is getting under way through the Illinois Agricultural Association.

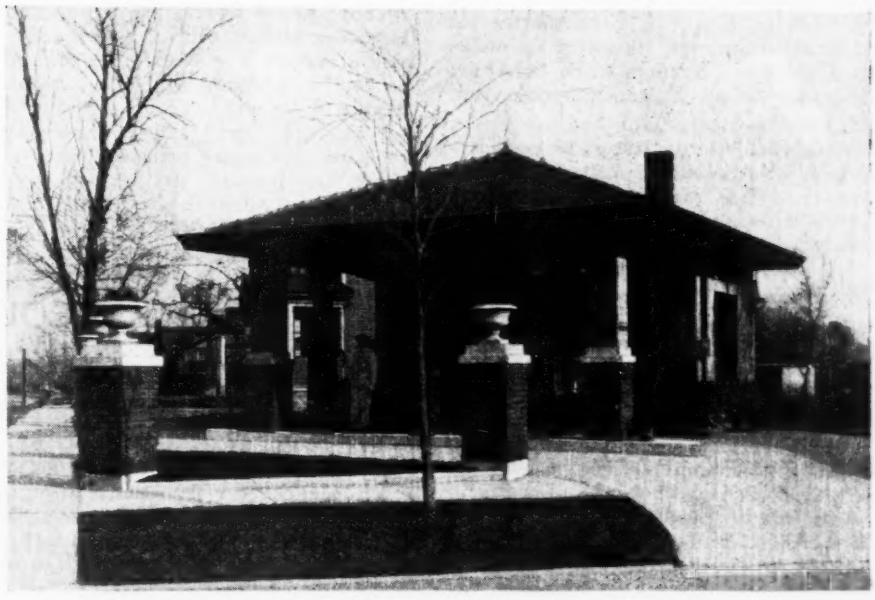
Lacking experience in the oil industry, and with limited capital to fall back on, the promoters of the oil co-ops, after their retail marketing companies are started, believe they see great profits in the wholesale jobbing branch of the business. In Minnesota they have now ventured into this further step in distribution, although their experience in the operating of retail marketing companies to date has not shown them the profits that were anticipated.

Perhaps they will go further and build a refinery and drill their own wells. Such moves would be as logical as those so far undertaken. In the end they will only have duplicated lines of business that have been established and have survived in periods of extreme competition where anything like excessive profits would be impossible.

In Minnesota some 20 farmers' co-ops have organized the Minnesota Co-op Oil Co., which has started to purchase oil products for the individual co-ops, on a brokerage basis. This company has been capitalized with about $6,000 so far through $300 memberships, as they are called, taken out by individual companies. This joint enterprise has no physical facilities to date, using the plant of the old Interstate Oil Co., in Minneapolis by arrangement. Its officers draw no salaries except E. G. Cort, manager, who formerly ran the co-op company in Albert Lea. Mr. Cort acts as a supervisor and advisor also for the individual co-ops and puts in some time in promoting new companies.

WHILE the expense of doing business of the joint co-op is not large at present, it is in existence, as a part of the co-op system, and is one of the intermediate links in the chain of distribution, in protest of which the farmers' co-ops presumably were organized.

The Interstate Oil Co., doing a general marketing business in southern Minnesota for some years, September 1 changed its clothes, and was organized in its seven branches under the same



This service station is also the company headquarters for the Freeborn County Co-op Oil Co., which operates in Albert Lea, Minn., and four nearby towns. The service station was purchased from an Independent oil company about a year ago

form as the farmers' co-ops. It is now known as the United Cooperative Oil Co. Its main plant and offices are out East Hennepin Avenue in Minneapolis. Its plant does the barreling, on commission, of the tank car purchases of lubricating oils which the joint Minnesota Co-op Oil Co. buys for its member co-ops.

While the state, through the department of agriculture, recognizes this joint buying association of the farmers' co-ops, it nevertheless exercises close supervision over the co-ops through its own agents. It maintains this same parental relationship to all organizations formed under the co-operative association act, and disbursing their earnings on the basis of the business done with the concern by the individual stockholder. Among other things auditors from this state department must go over the books of each co-op four times a year. The expense of this supervision is borne by the public through taxes, instead of by the companies themselves. It is, however, another expense of doing business correctly the co-ops thought they could get along without, but actually have not found it possible to do so.

IN Illinois out of 212 co-operative organizations among farmers, in existence at the end of 1926, there were eight oil companies and six of these were started in that year. Here, as in Minnesota they had to be promoted. They did not come into being through a spontaneous movement of protest against gasoline or kerosene prices by the farmers themselves.

The Illinois Agricultural Association is the federation into which the local farm bureaus are organized in this state, and the active force in this is the Illinois Agricultural Cooperatives Association, a non-stock, non-profit association which carries on various centralized activities for the 212 farm bureaus and individual co-op marketing associations. Among these activities are auditing and accounting, collection of data, trade surveys, handling of collections and so on. It supports its staff through the fees it charges. This central bureau has as yet not decided how far the farm bureaus can go in starting up oil companies to compete with the established oil marketing companies, if the following excerpt under "Interest in Oil Companies" from its annual report represents opinion correctly:

"RESPONDING to the increase in interest by county farm bureaus in petroleum supply companies, the department has worked jointly with the legal and cooperative accounting departments in offering aid toward organizing such companies. Some study has been given to a proposed overhead service in collective bargaining, buying, and supervising on a state-wide basis, to aid the local supply companies. But no definite decision as to the type and scope of

such an overhead organization had been reached at the time of this report.

"A study has been made of the activities and the virtues and defects of farm supply purchasing organizations in other states. Plans for a similar service in Illinois are being considered. To be successful such work must be planned carefully and wisely. Difficulties and objections must be met and overcome before such a service can be successful. Just what can and should be done in Illinois is still a matter for determination and it seems probable that there will be more work and study necessary before a definite decision can be reached."

This Illinois organization is considering as pretentious a plan as having a supply board, which would draw up specifications for various petroleum products and inspect deliveries to see if they met these specifications.

STUDY of the gallonage report of the Minnesota co-op oil companies carried in last week's issue of National Petroleum News will show the limited conditions under which the co-ops are operating there. They get along best in farming communities where the towns are small and the business interests in these towns depend principally upon farm trade. In such places the business houses can be coerced into buying oil products from the co-op, through fear of offending the farm bureau if they refuse.

Their operation of service stations is mostly limited to a station at their headquarters which the farmer member visits when he comes to town. In towns of even a few thousand population there will be other oil companies doing as much or more gallonage as the co-op, and having the principal part of the town business.

The fact the co-ops do a relatively greater portion of the kerosene business, as compared with gasoline sales, than do the other oil companies, shows the extent to which they depend upon the country trade for their existence. They handle these country deliveries almost entirely by hiring drivers to haul the stuff on a flat per gallon basis. They pay two cents a gallon in some cases, in others a cent and a half and furnish the driver with his gasoline and oil. The driver owns the truck, the co-op the tank.

Their service on country deliveries does not begin to compare with that given by the Standard and other companies. They will tell the member who calls up from out in the country and wants gasoline or kerosene that the truck cannot come out unless a load is taken in the neighborhood and they will urge the member to canvass his neighbor farmers and see if he cannot arrange for a load to be delivered.

Although the co-op has a manager, paying an average for the state of $150 a month for such service, with many co-ops authority and responsibility is almost entirely placed with a board of directors, made up from the co-op's farmer membership. These directors, all of them without previous experience in the oil marketing business, must attend perhaps a meeting a week in town and decide the policies the company is to follow.

One great weakness of the farmers' co-op oil companies, as of any co-operative venture, is that they are not organized outright to carry on an oil marketing enterprise for a fair profit. They succeed, in individual cases, because they function to this end, through a good manager. They were all organized, however, as a protest against what were believed to be unfair profits, or by promotors with some selfish reason of some kind, or as an additional activity of the farm bureaus, and so on.

As a class they lack the principal requisite that stimulates the company organized by private capital to perform a useful service, and grow through increased business and through putting part of its earnings back into legitimate expansion.

Intelligent sales work, good management and selling of quality products gives the other oil companies a means of competition with the co-ops that will undoubtedly prove successful in the long run. Particularly will this prove successful as the farmers themselves find what many of their leaders now tell them is true; namely that the farmer will eventually be further ahead through putting his money and time into directly helping his own business; rather than into activities the success of which is entirely outside his own effort.

Cash Low, Accounts Receivable Up For Freeborn Co. Co-op

AS regards cash on hand, volume of accounts receivable, and relation of quick assets to current liabilities, the Freeborn County Co-op Oil Co., does not show up nearly as well in its 1926 earnings statement as the Owatonna company.

The Freeborn company has headquarters at Albert Lea, Minn., a town of about 8000, and four branch stations nearby. It did nearly as much business as the Owatonna company, handling 528,509 gallons of gasoline in 1926, 153,931 of kerosene and 72,532 of distillate.

To carry on a business of this volume, this company on Dec. 31, 1926, had only $6645.74 cash in the bank and $286.53 in notes receivable. Accounts receivable were up to $13,623.26, with what seems like a low proportion of $539.24 charged off as a reserve for bad debts. This large amount in accounts receivable may be partly due to debts of patrons carried on the books and to be balanced by patronage dividends due at the end of the year.

Merchandise inventory was carried at $16,485, making its total of quick assets $36,500. Its current obligations as shown in its balance sheet amounted to around $48,832.76. Notes and accounts payable, commissions to drivers, interest and taxes were $16,108.01 and patronage dividend refunds due were $32,724.75. This company is said to have paid $28,000 in refunds from 1926 operations. It would be interesting to know how it was financed.

The Freeborn company carried plant and equipment investment at $24,770 at the end of 1926, outside of its service station which it bought from another oil company in Albert Lea for $10,000, according to its balance sheet. It carried a merchandise inventory of nearly $16,500, as compared with a little over $9,000 for the Owatonna company.

The Freeborn company had 809 stockholders at $25 per head. Its net profit for 1926 was 13 per cent of its gross business of $231,483. The company's balance sheet as of Dec. 31, 1926, follows:

The Freeborn County Co-op Oil Co.
Albert Lea, Minn.
Balance Sheet Dec. 31, 1926

ASSETS		
Cash on Hand and in Bank		$ 6,645.74
Notes Receivable	$ 286.53	
Accounts Receivable	13,623.26	
	$13,909.79	
Deduct reserve for bad debts	539.24	13,370.55
Merchandise Inventory		16,485.66
Prepaid Ins. & Office Sup.		432.84
Bulk Plants & Gen. Equip. trucks and fur. & fix. cost	$28,963.70	
Deduct Deprec. charged off	4,193.65	24,770.05
Service Station—Cost		10,000.00
Organization Expense		700.00
		$72,404.84
LIABILITIES		
Notes and Accounts Payable		$11,610.00
Accrued Com.-Drivers		1,768.09
Accrued Interest and Taxes		2,729.92
		$16,108.01
Patronage Div. Refunds due 1925	3,800.48	
Patronage Div. Refunds due 1926	28,924.27	32,724.75
Reserve for Payment of Service Station		1,755.00
NET WORTH		
Capital Stock	20,175.00	
Permanent Surplus	1,642.08	21,817.08
		$72,404.84

PROFIT AND LOSS STATEMENT	
Sales and other income	$231,483.97
Deduct cost of sales	166,589.33
Gross Income	$ 64,894.64
Deduct Expense	34,448.61
Net profit on operations	$ 30,446.03
Deduct interest paid on Cap. St.	1,521.76
Patronage dividend refund due	**$ 28,924.27**

UTICA, MISS.—Hinds County Oil Co., which began business 18 months ago, reports both wholesale and retail business good. An air tester has just been installed. H. M. Reed is manager; Owen Hines, station man, and D. W. Currie, tank wagon salesman.

Owatonna Co-op Sales Were High And Expense Held Down

THE Central Co-operative Oil Association, Owatonna, Minn., is pointed to as the shining example of success in operation of a farmers' co-operative oil company. Owatonna has a population of around 7500.

This company sold 749,392 gallons of gasoline, 220,153 of kerosene and 24,276 of distillate in 1926, and reported a net profit for the year of $37,279, upon capital stock issued of $18,800, and surplus all told of $51,255.

At the end of the year it had $22,287 in cash in the bank, and $26,500 in quick assets, as certificates of deposit, these probably having to do with refunds held for non-stockholders until they had accumulated in each case to $25 and a share of stock could be issued in lieu of paying the dividend in cash.

Accounts receivable were down to $2244, and inventories of merchandise only $9372. Plant and equipment investment totaled only a little over $17,000.

Refunds due to stockholders and non-stockholders from 1926 operations were carried at $33,050.89 and there were also unpaid $7237 refunds due from previous years, probably due to non-stockholders and accumulating. The financial statement indicated this company was in a position to pay refunds due and still leave cash for it to operate.

This co-op had 752 stockholders. Organized in 1922 it had earned $70,287.05 in patronage refunds.

Depreciation on building and plant is carried at a lower rate than is general in oil company practice. Operating expense for 1926 was carried as 12.9 per cent of gross sales and net profit at 16.2 per cent of gross sales.

The Central Co-operative Oil Association financial statement as of Dec. 31, 1926, follows:

CENTRAL CO-OPERATIVE OIL ASSOCIATION

Owatonna, Minn.

Financial Statement as of Dec. 31, 1926

Assets

Cash in Bank	$22,287.20
Certificates of Deposit	26,500.00
Accounts Receivable	2,244.02
Merchandise Inventory	9,372.92
Prepaid Insurance and Lease	157.51
Building and Plant	5,223.53
General Equipment	9,209.29
Small Equipment and Supplies	249.37
Office Equipment	1,756.05
Automobile	630.00
	$77,629.89

Liabilities

Accounts Payable	$ 4.00
Accrued Expense	413.99
Accrued Taxes	1,044.61
Accrued Interest on Capital Stock	1,361.49
Refunds Due on previous years	7,237.49
Capital Stock Issued	18,800.00
Surplus	6,738.85
Reserve for Depreciation	4,750.69
Surplus and Educational Fund 1926	4,227.88
Refunds Due Patrons 1926	33,050.99
	$77,629.89
Net Profit for 1926	$37,278.77

Shrinkages

Gasoline	1.63%
Kerosene	.48%
Lubricating Oil	.70%
Grease	.25%

Depreciation Charged Off

Building and Plant	5%
General Equipment	10%
Small Equipment and Supplies	50%
Office Equipment	10%
Automobile	25%
Shares Outstanding	752
Par Value of Stock	$ 25.00
Book Value of Stock Jan. 1, 1927	38.00
Total Cash Sales	222,927.71
Cost of Sales	70.9%
Gross Profit on Sales	29.1%
Operating Expense	12.9%
Net Profit of Sales	16.2%

Patronage Refunds

As Paid During Life of Organization

1922 to Stockholders and Non-Stockholders	$ 3,277.40
1923 to Stockholders and Non-Stockholders	6,462.28
1924 to Stockholders and Non-Stockholders	5,125.22
1925 to Stockholders and Non-Stockholders	22,371.17
1926 to Stockholders and Non-Stockholders	33,050.89
	$70,287.05

Seek to Force Station Owners Into Union

Staff Special

CHICAGO, March 31.—Filling station owners of Chicago who can't see why they should join the Teamsters' Union are now undergoing a strike. Not only has the union called off their organized employees but it is trying to withdraw the patronage of all truck fleet operators whose drivers are union men, and cut off their gasoline supply.

The teamsters' union is officially called the International Brotherhood of Chauffeurs, Teamsters and Helpers, and it embraces a good portion of the truck drivers of Chicago. Filling station attendants are also organized under the same head.

Other labor unions embrace tire repair men, electrical workers, garage employees and repair shop men. Serving all these unions is the "Automobile Trades Council."

Following the example of the other tradesmen, the teamsters set about to make the filling station owners come into their union.

The campaign started about two weeks ago and has been fairly successful. A great many filling station proprietors joined the union without protest, although they were given to understand that they were really not laborers and would not be allowed a vote in union affairs, in fact they would not even be allowed to attend union meetings.

There are roughly 1200 drive-in filling stations in Chicago, more than half of them privately owned. The owners, for the most part, work at their own stations. They pump gasoline, sell motor oil, grease chassis, and so on. Some 300 of these oil men, with one or two stations, belong to an association called the Automobile Associated Trades of Illinois, whose president is F. H. Avery. The association includes owners of tire shops, garages, battery stores, and filling stations, on an equal footing.

The demands of the labor union were brought up and discussed at an association meeting recently and the members who are in the oil business decided to let "Paddy" Berrell and his organization alone. So a good many of them decided not to join the union, and the current strike is the result.

The tank truck drivers of Standard Oil Co., Sinclair Refining Co., Roxana Petroleum Corp., The Texas Co., and other large dealers are all in the union and they were forced to quit delivering oil to stations of men who did not join. On top of that, unionized truck drivers of laundries, grocers, coal companies, etc., are driving past the "unfair" stations and buying gasoline elsewhere. Nevertheless, the non-union stations are getting gasoline.

The strike is expected to come to a crisis after the election of a mayor on April 5.

Sinclair Sells Tankage

TULSA, April 2.—The Sinclair Oil & Gas Co. has sold approximately one million barrels of steel storage to the Prairie Oil & Gas Co. The tanks are located in the Burbank field. No oil figured in the deal.

Will Finish Four Wells in Winkler County

HOUSTON, April 4.—Four drilling wells in the new flush Winkler county area of west Texas will be completed by three operating interests before curtailing further developments against improvement in general producing conditions.

This policy will defer for the present, further adverse effect on the crude oil situation. The wells are in the area described on page 28 of the March 30 issue of National Petroleum News where Gulf Production Co. completed a 4400-barrel well in the northwest corner of section 34.

The Gulf well is a diagonal offset to the Westbrook et al discovery in the southeast corner of section 42 which was sold to Southern Crude Oil Purchasing Co. after coming in for about 130 barrels daily. After being worked over, the discovery well averaged about 400 barrels daily last week. Wells to be completed before deferring further operations include offsets of Pure Oil Co. in the southwest corner of section 41 and Southern Crude Oil Purchasing Co. in the northeast corner of section 33.

A west offset of the discovery well belonging to Independent Oil & Gas Co. also will be completed, this in turn calling for a south offset by Southern Crude. Then further drilling is to be deferred.

Hopkins Heads Kansas Standard After 30 Years of Service

A. S. HOPKINS

Staff Special

TULSA, April 4.

A. S. HOPKINS, newly elected president of the Standard Oil Co. of Kansas, is a veteran in the refining business in the Mid-Continent field. Probably no other executive in this area has such a long record of service in manufacturing petroleum products.

The Standard Oil Co. of Kansas, was organized in 1892 shortly after Guffey & Galey came out to Neodesha from Pittsburgh and began prospecting for oil. The refinery was built after it became apparent that Kansas was to become an important producing field.

Mr. Hopkins started work at the Standard refinery at Neodesha in 1897 when the Mid-Continent field was still in its infancy. He was a young fellow just out of school at the time and began working around the plant as roustabout.

Since that time Mr. Hopkins has held about every job available in the plant and office of the company. Two years ago he was made vice president and general manager. At the recent annual meeting of the company he was given the highest honor in the company as a fitting reward for 30 years of continuous service.

Mr. Hopkins succeeds J. C. McDonald, another veteran refiner, who presented his resignation at the meeting so that he might retire. Mr. and Mrs. McDonald left shortly after the meeting for an extended trip to Europe.

Mr. McDonald has been president of the Standard Oil Co. of Kansas since 1911, about the time the company was divorced from the Standard Oil of Indiana. Prior to that time he had been at the Chicago offices of the Indiana company. At the time of his retirement Mr. McDonald was 63 years of age.

Mr. McDonald began working for the Standard Oil Co. when he was about 26 years old. He went to the Standard of Kansas after 21 years of service.

At the annual meeting E. A. Warren, another veteran in the service of the company, was promoted from secretary and treasurer to vice president. A. L. Morrison, formerly his assistant, was made secretary and treasurer and P. H. Rohde was promoted to assistant secretary and treasurer. E. A. Metcalf, superintendent of the refinery was elected to the board of directors.

Roxana's Chicago Plant Begins Operation

ST. LOUIS, MO., April 1.—Through the Executive Offices of the Roxana Petroleum Corp., refiners of Shell Petroleum Products, announcement has just been made that the corporation's new and modern refinery at East Chicago has begun operating.

The construction was started early in 1926. Now the project is nearly completed and production of gasoline and other products has already commenced. The refinery has a capacity of 16,000 barrels daily.

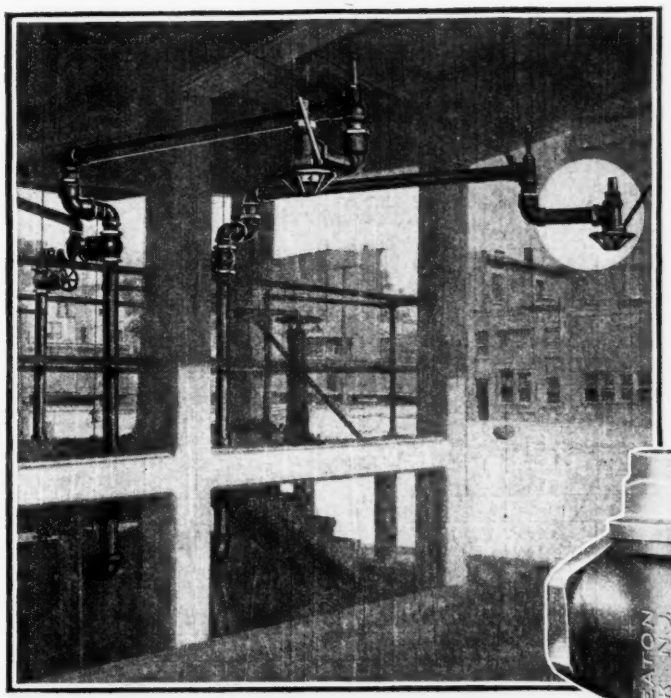
Before this new refinery could operate economically, it was necessary that the pipe line from the Oklahoma oil fields to Wood River, Ill., be extended so as to keep the East Chicago refinery supplied with crude oil. This meant the construction of another 250 miles of pipe line, in addition to the existing 476-mile line extending from Oklahoma to the Wood River refinery. Additional pumping stations were necessarily installed throughout the length of the line, so as to make possible the daily delivery of 42,000 barrels of crude oil to Wood River and East Chicago plants. The Arkansas refinery at Arkansas City, Kansas, is supplied from the Mid-continent fields by a separate pipe line delivering 18,000 barrels of crude oil daily.

The site of the new East Chicago refinery faces the Dunes Highway just between East Chicago and Hammond. Large signs have been erected on the property so that passing motorists may identify the plant. Besides the necessary equipment and tanks for refining gasoline and other petroleum products from crude oil, the plant is equipped with electric power from the Chicago Super-power System, has its own complete telephone system, a complete car shop, an administration building, a complete testing laboratory, together with attractive home quarters for officials.

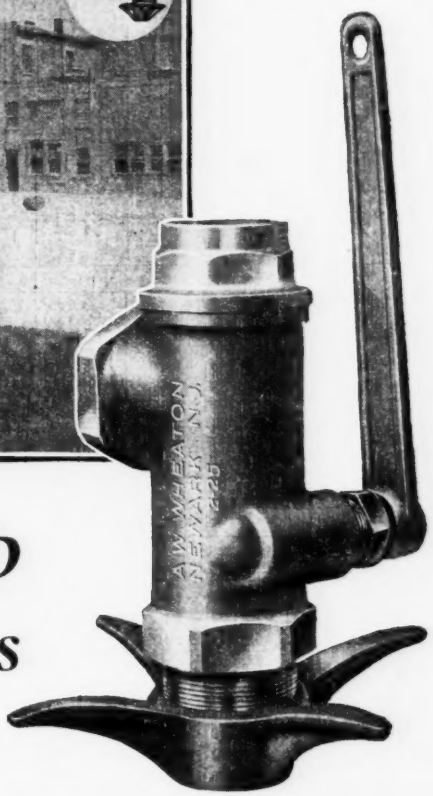
There is, in addition, a loading wharf on deep water on the Indiana Harbor canal, with pipe line facilities from the refinery to enable oil tankers to be loaded for shipment to points around the Great Lakes.

Oil Men to Talk Safety

CLEVELAND, April 2.—Three oil company men will speak at the third annual eastern safety conference in Newark, N. J., April 27. They are: Capt. A. A. Nichoson, manager of employment and service department, The Texas Co., on "Accident Prevention in the Petroleum Industry;" William Donovan, plant superintendent, Bayway refinery, Standard Oil Co. of New Jersey, on "Educating New Employes," and A. R. Bush, plant superintendent, Barber Asphalt Co., Maurer, N. J., on "Safety in Small Plants."



The photograph at the left shows an installation of Wheaton Type 25 Loading Valves—also, Wheaton Double Swing Joints.



Let this Installation *Stop* those *Leaks* and *Overflows*

APPROVED by scores of engineers, this simple, correct installation is saving gasoline—and money—for loading stations throughout the country.

The Wheaton Type 25 Loading Valve, especially designed for the effluent end of the line, *prevents* leaks and overflows. Moreover, its location is at the point of greatest convenience.

The valve is counterbalanced. This means *slow, smooth, easy* action—no jars or shocks to spring leaks in the pipe line. And it is *self-closing.* The valve must be *held* open by the operator, for the instant the handle is released the valve shuts *tight.*

Type 25 Loading Valve reflects the same enduring *quality*—the same painstaking regard for every detail—which distinguishes all Wheaton Faucets and Valves. It is made of a special-analysis brass alloy—tempered, toughened and tested to ensure long life.

It is equipped with a sturdy brass alloy spider, which prevents it from slipping into the tank and catching; this removes the danger of jerking joints loose should the truck move before the Valve is swung away.

Send for a sample of Type 25 Loading Valve—if it does not prove entirely satisfactory you may return it for full credit or refund. Also, ask for the illustrated Wheaton Catalog, which fully describes all Wheaton Products.

A. W. WHEATON BRASS WORKS, NEWARK, NEW JERSEY

Wheaton

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Compilation Of Mid-Continent Refinery Operations

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National Petroleum News

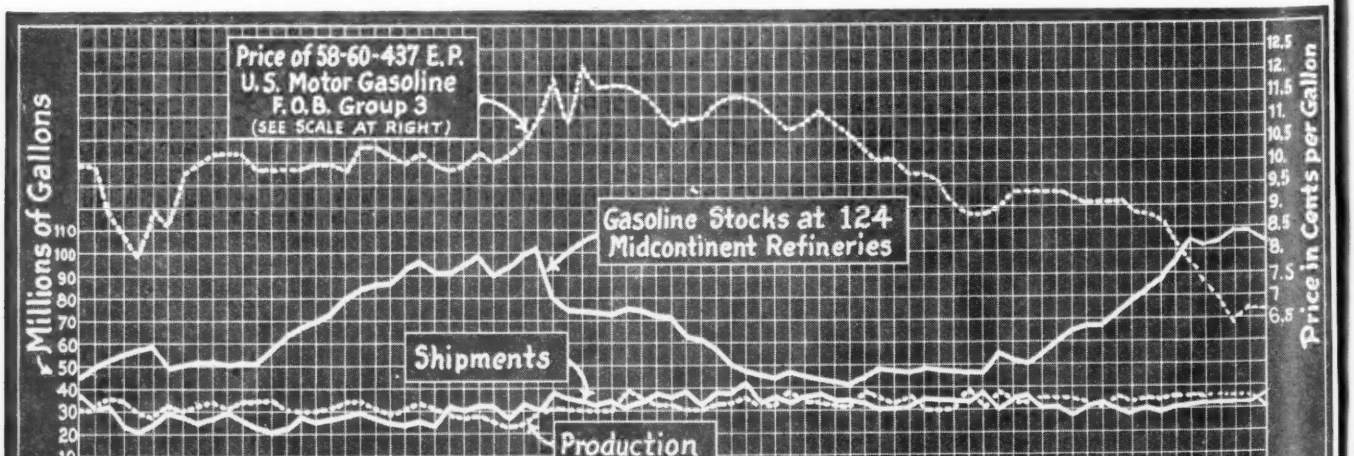
Mid-Continent Refinery Operations Week Ended Apr. 1 (By Telegraph)

	Kansas	Oklahoma	North and Cent. Texas	North La.-Ark.	Total Week Ended Apr. 1	Total Week Ended Mar. 4
Plants Reporting	23	46	41	14	124	124
Crude Cap. (Bbls.)	98,200	165,900	144,300	53,700	462,100	462,100
Cracking Capacity	21,000	45,800	15,750	20,200	102,750	102,750
Da. Av. Crude Runs	57,464 + 6.3	104,434 + 1.6	70,065 + 12.3	47,734 — 1.9	279,697 + 4.4	275,596
Da. Av. Other Oils	3,905 —22.9	3,957 — 3.5	4,324 — 7.1	915 —43.8	13,101 —15.2	15,813
GASOLINE—Gallons						
Stocks March 25	12,313,304	69,431,838	20,063,702	6,706,895	108,515,739	100,094,086
Prod. 3-25 to 4-1	8,141,041 — 1.5	15,584,503 — 2.7	6,692,841 — 4.7	3,528,550 —0.01	33,946,935 — 2.5	35,364,443
Ship. 3-25 to 4-1	8,512,754 + 1.7	18,985,500 +23.3	7,827,741 + 18.4	4,385,814 +42.0	39,711,809 +18.6	33,815,625
Stocks April 1	11,941,591 — 3.0	66,030,841 — 4.9	18,928,802 — 5.7	5,849,631 —12.8	102,750,865 — 5.3	101,642,904
Ratio Sales to Prod.	104.6%	121.8%	117.0%	124.3%	117.0%	95.6%
KEROSENE—Gallons						
Stocks March 25	2,948,289	8,796,337	2,152,858	1,273,371	15,170,855	15,052,012
Prod. 3-25 to 4-1	1,703,354 + 0.2	2,520,771 + 2.2	1,525,534 — 9.7	976,319 +21.2	6,225,978 — 0.4	6,124,534
Ship. 3-25 to 4-1	1,419,289 +19.4	2,840,352 +13.5	1,430,217 — 14.9	380,972 +23.1	6,070,830 + 6.8	5,974,796
Stocks April 1	3,232,354 + 9.6	8,476,756 — 3.6	2,248,175 + 4.4	1,368,718 + 7.5	15,326,003 + 1.0	15,201,750
Ratio Sales to Prod.	83.3%	112.7%	93.8%	80.0%	97.5%	97.6%
STOVE DISTILLATE—Gallons						
Stocks March 25	2,032,668	3,934,093	1,252,912	149,688	7,369,361	6,295,932
Prod. 3-25 to 4-1	525,846 — 0.1	433,739 —11.3	335,397 + 4.7	49,098 —32.5	1,344,080 — 4.6	2,197,767
Ship. 3-25 to 4-1	407,283 —18.7	586,723 +10.4	436,265 +132.0	32,424	1,462,695 +19.8	1,334,092
Stocks April 1	2,151,231 + 5.8	3,781,109 — 3.9	1,152,044 — 8.1	166,362 +11.1	7,250,746 — 1.6	7,159,607
Ratio Sales to Prod.	77.5%	135.3%	130.1%	66.0%	108.8%	60.7%
GAS OIL—Gallons						
Stocks March 25	4,854,824	35,866,108	13,279,414	6,752,351	60,752,697	54,263,748
Prod. 3-25 to 4-1	1,629,395 +10.4	2,914,240 +25.2	2,375,706 +130.9	2,490,504 — 1.9	9,409,845 +27.7	8,145,544
Ship. 3-25 to 4-1	1,016,977 —26.7	2,215,126 +59.3	1,886,312 + 69.9	2,778,243 +51.6	7,896,658 +38.0	5,890,298
Stocks April 1	5,467,242 +12.6	36,565,222 + 1.9	13,768,808 + 3.7	6,464,612 — 4.3	62,265,884 + 2.5	56,518,994
Ratio Sales to Prod.	62.4%	76.0%	79.4%	111.6%	83.9%	72.3%
FUEL OIL—Gallons						
Stocks March 25	10,172,621	43,034,008	18,256,300	7,770,785	79,233,714	72,688,331
Prod. 3-25 to 4-1	6,327,740 + 5.1	6,169,627 — 0.4	8,520,120 + 13.2	6,670,489 — 8.4	27,687,976 + 2.5	28,550,234
Ship. 3-25 to 4-1	5,800,242 +12.8	7,011,651 — 6.7	6,875,268 + 7.7	7,822,024 +16.5	27,509,185 + 6.8	25,011,208
Stocks April 1	10,700,119 + 5.2	42,191,984 — 2.0	19,901,152 + 9.0	6,619,250 —14.8	79,412,505 + 0.2	76,227,357
Ratio Sales to Prod.	91.7%	113.6%	80.7%	117.3%	99.4%	87.6%

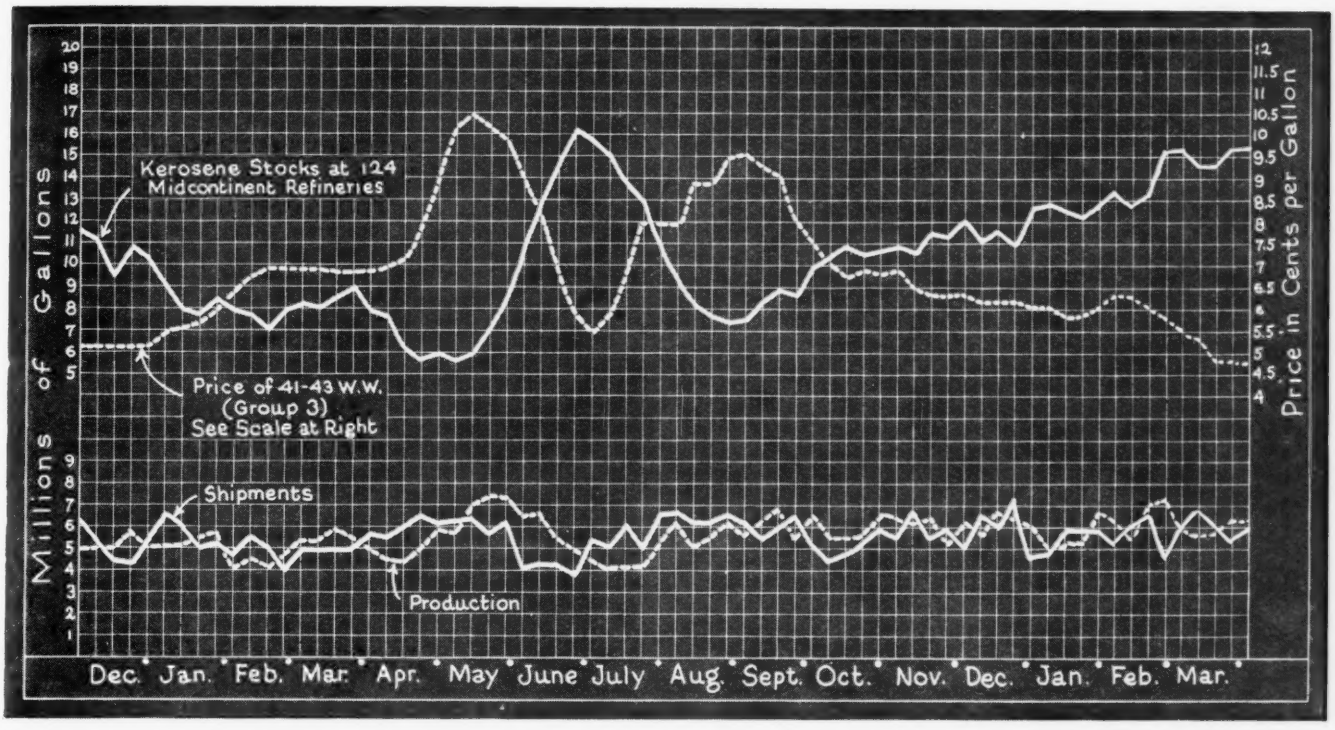
Gasoline Produced by Various Methods, Week Ended Apr. 1

	Kansas	% of Total	Oklahoma	% of Total	Texas	% of Total	Louisiana-Arkansas	% of Total	TOTAL	% of Total
Straight Run	5,703,151	70.1	12,436,103	79.8	5,657,020	84.5	1,467,274	41.6	25,263,548	74.4
Cracked	1,946,826	23.9	2,119,484	13.6	865,889	12.9	1,597,680	45.3	6,529,879	19.2
Natural	491,064	6.0	1,028,916	6.6	169,932	2.6	463,596	13.1	2,153,508	6.4
Total	8,141,041		15,584,503		6,692,841		3,528,550		33,946,935	

+ or — columns are % change over previous week


Price of 58-60-437 E.P. U.S. Motor Gasoline F.O.B. Group 3 (SEE SCALE AT RIGHT)
Gasoline Stocks at 124 Midcontinent Refineries
Shipments
Production
Millions of Gallons
Price in Cents per Gallon
Oct. Nov. Dec. Jan. Feb. Mar. Apr. May June July Aug. Sept. Oct. Nov. Dec. Jan. Feb. Mar.

Barometer of Mid-Continent Refinery Market—Week Ending April 1


Millions of Gallons
Price in Cents per Gallon
Kerosene Stocks at 124 Midcontinent Refineries
Price of 41-43 W.W. (Group 3) See Scale at Right
Shipments
Production
Dec. Jan. Feb. Mar. Apr. May June July Aug. Sept. Oct. Nov. Dec. Jan. Feb. Mar.

Charted Course of Prices, Production, Shipments, Stocks of Principal Refined Products, Week by Week, From Reports Made by 124 Plants to National Petroleum News.

Gasoline Stocks are Reduced Six Million Gallons

TULSA, April 4

STOCKS of gasoline at 124 refineries in the Mid-Continent field representing 60 per cent of the operating capacity in the district were reduced six million gallons during the last week in March, according to reports gathered by National Petroleum News. On April 1 stocks at the reporting plants totaled 102,750,865 gallons as compared with 108,515,739 gallons on March 25.

The draft on stocks was caused by a sharp increase in shipments and a moderate reduction in production. Shipments jumped 6,300,000 gallons during the week to 39,711,809 gallons. This is the largest shipments reported by the group of plants since July 30, 1926 when total shipments reached a peak for that year of 40,356,064 gallons, only 640,000 gallons greater than those for the week just closed.

Every group in the field participated in the increased business. Kansas shipment increased 1.7 per cent, the smallest of any group. Oklahoma shipments increased 23.3 per cent, north and central Texas 18.4 per cent and north Louisiana and Arkansas 42 per cent. Stocks also were reduced in every section, 400,000 gallons in Kansas, 3,400,000 gallons in Oklahoma, 1,200,000 gallons in Texas and 860,000 gallons in north Louisiana and Arkansas.

Production of gasoline at all plants was reduced over 800,000 gallons from the previous week to a total of 33,946,935 gallons, in spite of the fact that charges of fresh crude to stills were increased 12,000 barrels per day or 4.4 per cent to an average of 279,697 barrels. This situation was brought about by another reduction in the production of cracked gasoline.

During the week ending March 18 the 124 reporting plants produced 7,863,100 gallons of gasoline by cracking, representing 22.1 per cent of the total gasoline production for that period. During the following week cracked gasoline production dropped 350,000 gallons to 7,512,924 gallons which represented 21.6 per cent of the total gasoline production. During the week just closed cracked gasoline production was cut one million gallons to 6,529,879 gallons, representing only 19.2 per cent of the total gasoline production. This policy of less cracking is in line with reported shutting down of large pressure installations in the east.

It is interesting to note that in the corresponding week a year ago gasoline stocks were reduced four million gallons, the first large reduction for that year although there had been some cuts in stocks in the second week of March and in the week ending March 26, 1926, gasoline stocks had been reduced 760,000 gallons.

During the week just closed shipments of kerosene and stove distillates were almost in balance with production. Kerosene stocks at all plants were increased 150,000 gallons to 15,326,003 gallons and stocks of home heating distillate were reduced 120,000 gallons to 7,250,746 gallons.

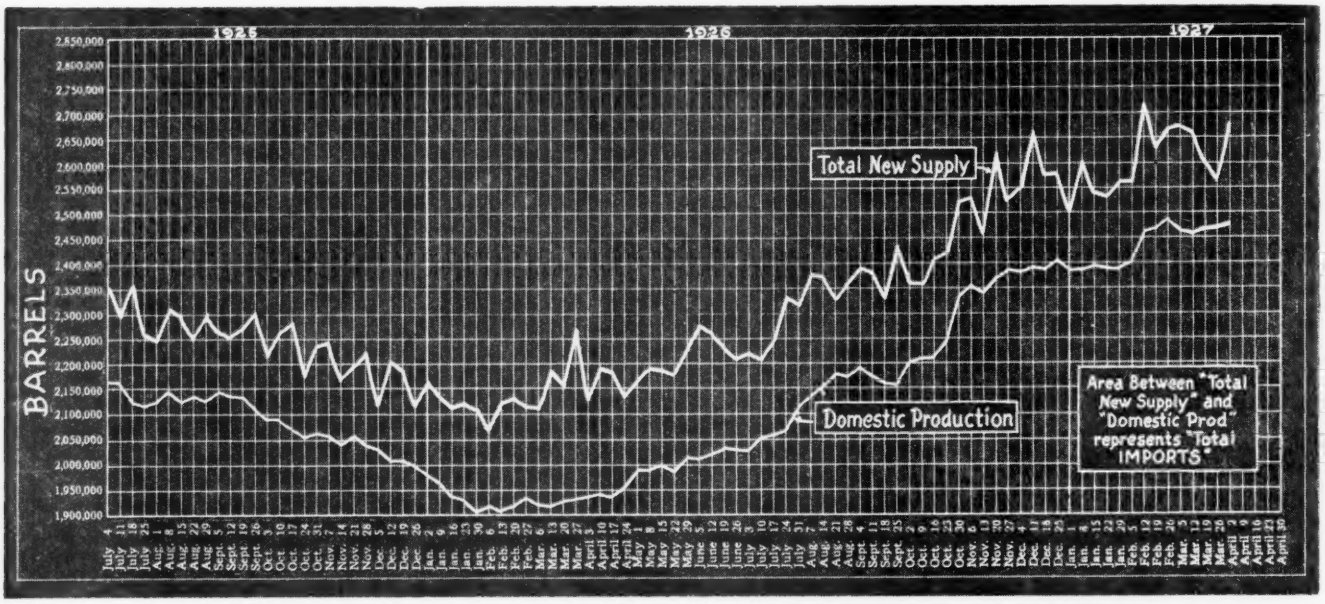
Shipments of fuel oil were better during the last week of March, with the result that stocks were almost stationary. Shipments were only 180,000 gallons below production. Gas oil stocks increased 1,500,000 gallons, however, to 62,265,884 gallons.

Summary for the Month

Production and shipments, all reporting refineries for four weeks ended April 1. Change in stocks figured from March 4.

	Gallons
Gasoline	
Production	139,502,525
Shipments	138,394,564
Net change in stocks	+1,107,961
Ratio sales to production	99.2%
Kerosene	
Production	24,259,146
Shipments	24,134,893
Net changes in stocks	+124,253
Ratio sales to production	99.5%
Stove Distillate	
Production	6,593,358
Shipments	6,502,219
Net change in stocks	+91,139
Ratio sales to production	98.3%
Gas Oil	
Production	30,758,752
Shipments	25,011,862
Net change in stocks	5,746,890
Ratio sales to production	81.3%
Fuel Oil	
Production	109,136,807
Shipments	105,951,659
Net change in stocks	+3,185,148
Ratio sales to production	97.1%

Daily Average Crude Oil Production and Imports



Daily average gross output of United States, by fields, for week ending with dates below, as compiled by American Petroleum Institute

PRODUCTION SUMMARY

	April 2	Mar. 6
Production east of Rockies	1,840,600	1,823,250
Increase		17,350
Total Production in U. S.	2,477,900	2,461,950
Increase		15,950
Crude Oil Imports	207,428	114,571
Increase		92,857
Total Crude Supply	2,685,328	2,576,521
Increase		108,807

OKLAHOMA

	Apr. 2	Mar. 26
North Braman	6,100	6,300
South Braman	3,850	4,100
Blackwell	3,950	4,000
Hubbard	7,600	5,950
Thomas	1,550	1,700
Tonkawa	23,050	24,250
Garber	17,400	17,600
Burbank	45,550	45,950
Osage, outside Burbank	35,250	35,250
Watchorn	2,750	2,700
Cushing	21,250	21,250
Yale Jennings	11,900	11,950
Davenport	3,550	3,550
Bristow-Slick	27,300	27,300
North Okmulgee	17,250	17,250
Lyons-Deaner	4,400	4,400
Stroud	1,450	1,500
Cromwell	13,400	13,500
Papoose	7,350	7,450
Wewoka	18,500	17,750
Seminole	294,700	281,850
Duncan district	6,750	6,750
Graham	8,400	8,500
Fox	1,800	1,800
Healdton	14,700	14,700
Scholem-Alechem	14,150	14,200
Hewitt	9,900	9,950
Earlsboro	36,350	36,300
Others	64,500	63,850
Total Oklahoma	724,650	711,600
Increase		13,050

KANSAS

	Apr. 2	Mar. 26
Greenwood County	41,200	41,450
Florence-Covert	1,900	1,900
Peabody-Elbing	3,850	3,850
Eldorado-Towanda	13,250	13,250
Augusta-Fox-Bush	4,600	4,650
Rainbow Bend	2,450	2,450
Russell	3,200	3,250
Churchill	16,500	15,600
Others	29,200	29,300
Total Kansas	116,150	115,700
Increase		450

NORTH LOUISIANA

Homer	5,300	5,300
Haynesville	7,900	7,900
Caddo, light	10,300	10,100
Caddo, heavy	4,700	4,500
De Soto, Red River	4,250	4,300
Elm Grove	650	650
Bellevue	1,600	1,650
Cotton Valley	6,100	6,100
Urania	11,000	10,600
Total North Louisiana	51,800	51,100
Increase		700

ARKANSAS

El Dorado	6,200	6,200
Smackover, light	11,650	11,700
Smackover, heavy	98,250	98,250
Stephens	1,350	1,350
Nevada	1,700	1,750
Lisbon	4,550	4,550
Others	200	200
Total Arkansas	123,900	124,000
Decrease		100

Texas (Outside Gulf Coast)

Panhandle District:

	Apr. 2	Mar. 26
Hutchinson County	104,100	106,400
Gray County	7,850	8,200
Carson County	7,700	7,500
Wheeler County	2,750	2,000
Others	50	50
Total, Panhandle District	122,450	124,150
Decrease		1,700

North Texas

Burkburnett	13,050	13,250
Electra	14,850	15,000
Iowa Park and K-M-A	4,200	4,350
Wilbarger	13,600	13,800
Archer County	30,250	30,500
Montague-Cooke	13,750	13,500
Others	900	900
Total, North Texas	90,600	91,300
Decrease		700

West Central Texas

Stephens County	9,900	9,900
Eastland-Desdemona	6,300	6,200
Brown County	35,500	35,100
Coleman County	1,650	1,650
Callahan County	5,000	5,100
Shackelford County	13,700	13,900
Young County	7,950	8,000
Throckmorton County	3,700	3,700
Palo Pinto County	2,100	2,200
Jones County	3,000	3,100
Mitchell & Scurry Counties	4,300	4,250
Howard County	2,200	2,250
Reagan County	26,300	27,550
Crane & Upton Counties	50,500	48,500
Pecos County	4,050	4,000
Others	4,950	4,500
Total, West Cent. Texas	181,150	180,900
Increase		250

East Central Texas

	Apr. 2	Mar. 26
Mexia	11,600	11,000
Currie	650	650
Richland	1,050	950
Wortham	3,900	4,000
Corsicana-Powell	19,950	19,750
Nigger Creek	5,950	5,900
Total, East Central Texas	42,700	42,250
Increase		450

Southwest Texas

Luling	18,150	18,350
Lytton Springs	2,300	2,350
Somerset	1,200	1,240
Laredo District	15,100	15,050
Piedras Pintas	50	50
Others	650	650
Total, Southwest Texas	37,450	37,700
Decrease		250
Total, Texas (Outside Gulf Coast)	474,350	476,300
Decrease		1,950

Gulf Coast

Coastal Texas

	Apr. 2	Mar. 26
West Columbia	10,300	10,050
Damon Mound	950	1,050
Big Creek	4,150	4,750
Boling	1,700	1,750
Blue Ridge	3,200	3,250
Pierce Junction	8,750	7,950
Humble	3,900	4,000
Goose Creek	7,750	7,400
South Liberty	3,750	3,550
Hull	16,000	16,250
Saratoga	1,200	1,200
Batson	1,400	1,550
Sour Lake	5,050	5,100
Spindletop	60,950	58,750
Orange County	5,000	5,100
Others	6,500	5,900
Total, Coastal Texas	140,550	137,600
Increase		2,950

Coastal Louisiana

Vinton	5,100	5,200
Lockport	6,450	5,550
Evangeline	950	950
Edgerly	1,200	1,150
Others	3,050	3,200
Total, Coastal Louisiana	16,750	16,050
Increase		700
Total, Gulf Coast	157,300	153,650
Increase		3,650

ROCKY MOUNTAIN

Wyoming

	Apr. 2	Mar. 26
Salt Creek	44,200	42,900
Grass Creek	3,000	2,800
Elk Basin	950	900
Big Muddy	3,150	2,850
Lost Soldier	3,700	3,800
Rock River	3,000	3,000
Lance Creek	700	700
Teapot Dome	1,350	1,100
Others	2,450	2,650
Total Wyoming	62,500	60,700
Increase		1,800

Montana

Cat Creek	2,340	2,400
Sunburst	12,000	12,000
Others	200	200
Total Montana	14,500	14,600
Decrease		50

Colorado

Moffat (Craig)	2,200	2,250
Fort Collins	3,500	3,600
Florence	700	700
Others	950	1,100
Total Colorado	7,350	7,650
Decrease		300

New Mexico

Artesia	1,950	2,000
Hogback	800	800
Table Mesa	250	250
Rattlesnake	550	1,900
Total New Mexico	3,550	4,950
Decrease		1,400
Total Rocky Mountain	87,950	87,900
Increase		50

CALIFORNIA

	Apr. 2	Mar. 26
Santa Fe Springs	44,500	44,000
Long Beach	92,000	92,500
Huntington Beach	75,000	76,000
Torrance	24,000	24,500
Dominguez	17,500	18,000
Rosecrans	10,500	10,500
Inglewood	37,500	37,000
Midway-Sunset	89,000	89,000
Ventura Avenue	53,300	51,000
Seal Beach	26,300	26,500
Others	167,700	169,700
Total California	637,300	638,700
Decrease		1,400

EASTERN

(Including Ill., Ind., Ky., Ohio, W. Va., Pa. and N. Y.)	104,500	103,000
Increase		1,500

Most Automobile Makers Increase Production

DETROIT, April 2.—Automotive industries this week said:

Indications are that March production for all manufacturers considered as a group, outside of Ford, will at least equal if not exceed March of a year ago and the demand for cars is such that the industry will probably show further gains in April.

All units of General Motors, Chrysler, Hudson-Essex, Reo, Hupp, Packard, and Studebaker, in the Michigan district, are reported as operating on large schedules, while Willys-Overland at Toledo and Nash at Kenosha are indicated as unusually active. Production was also resumed this month on a substantial scale in Durant's Lansing factory.

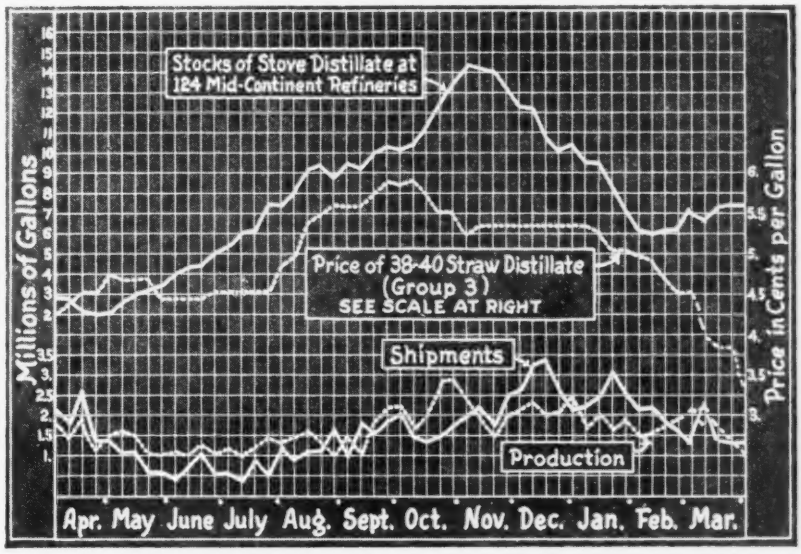
Reports from various parts of the United States indicate that the early spring weather has acted as a great stimulus for sales and various producers are finding their resources taxed to take care of the demand for cars.

Barometer of the Mid-Continent Refinery Market

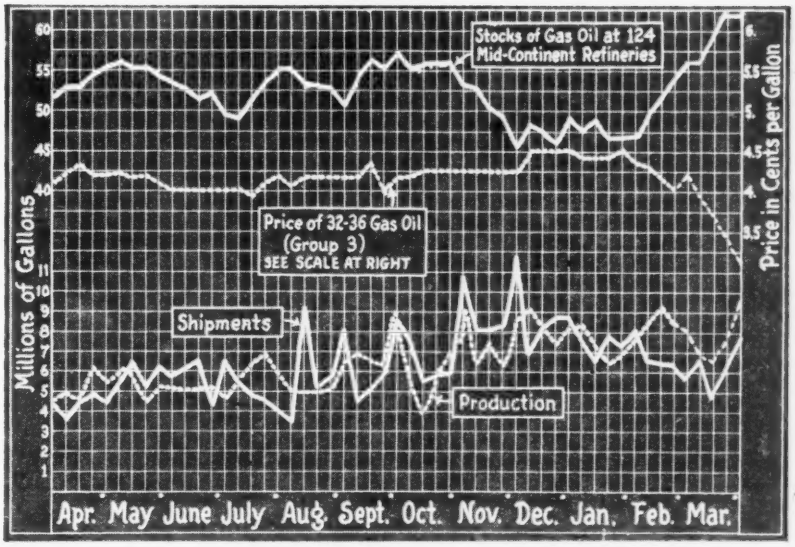
Week Ending April 1

Charted Course of Prices, Production, Shipments, Stocks of Principal Refined Products, Week by Week, From Reports Made by 124 Plants to National Petroleum News

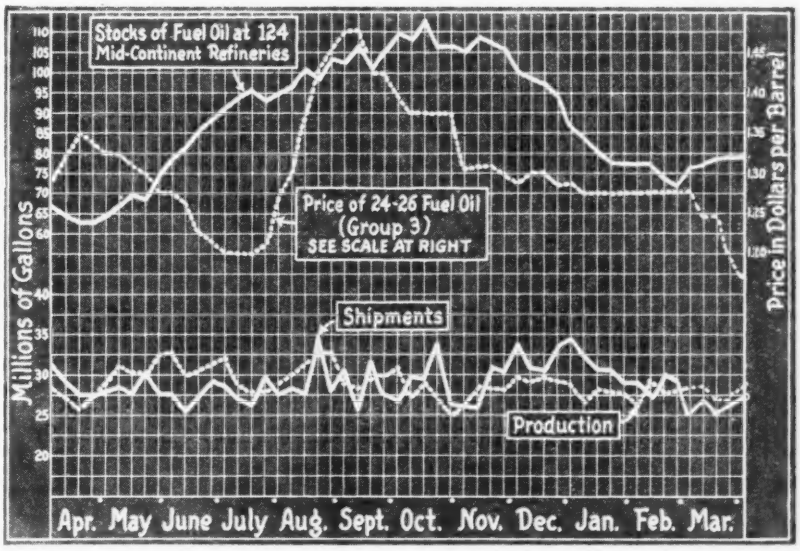
STOVE DISTILLATE


Stocks of Stove Distillate at 124 Mid-Continent Refineries
Price of 38-40 Straw Distillate (Group 3) SEE SCALE AT RIGHT
Shipments
Production
Millions of Gallons
Price in Cents per Gallon
Apr. May June July Aug. Sept. Oct. Nov. Dec. Jan. Feb. Mar.

GAS OIL


Stocks of Gas Oil at 124 Mid-Continent Refineries
Price of 32-36 Gas Oil (Group 3) SEE SCALE AT RIGHT
Shipments
Production
Millions of Gallons
Price in Cents per Gallon
Apr. May June July Aug. Sept. Oct. Nov. Dec. Jan. Feb. Mar.

FUEL OIL


Stocks of Fuel Oil at 124 Mid-Continent Refineries
Price of 24-26 Fuel Oil (Group 3) SEE SCALE AT RIGHT
Shipments
Production
Millions of Gallons
Price in Dollars per Barrel
Apr. May June July Aug. Sept. Oct. Nov. Dec. Jan. Feb. Mar.

Lima Output Looms as Seminole Wanes, Oklahoma at New Peak

By A. F. Hinton
N. P. N. Staff Writer

TULSA, April 2

BY averaging 724,000 barrels the past week, Oklahoma production again has set a new high record, a record which has been set and broken frequently during the current year. The last previous peak was 717,000 barrels during the week ended Feb. 26.

The Seminole area also had a remarkable week from a production standpoint, setting a new high figure at the beginning, and averaging 330,990 barrels for the week. On March 27 it produced 336,064 barrels, dropped as low as 322,400 barrels and got back to 334,700 later.

The Lima field, in township 8-6, is now the focal point of interest in the Seminole area, and recent developments indicate a very large field is in the making there. Earlsboro appears to be spotted, with numerous dry holes at inconvenient places, but with producing wells beyond the dry holes. Its erratic character makes predictions hazardous as to what the field will do in the future.

Seminole proper, the old 9-6 field, undoubtedly is on a decline, and cannot be expected again to reach its former production. Searight, the smallest of four fields making up the district, appears to be drilled up and to have seen its best days.

New wells are coming in at Lima with all the large initial production that characterized early completions at Seminole, and the field's area already is large enough to make observers feel certain its production will at least equal that of the original 9-6 pool. This field is in just about the situation of Seminole last September and October, when it began to dawn on the industry that a real major field was being developed. If history repeats itself at Lima, the middle of July may see a production of around 230,000 barrels a day in township 8-6.

ON this basis, there seems little hope that there is to be a decline in production in the near future for the Seminole district. The 9-6 field may go away down, but 8-6 seems sure to go away up, while Earlsboro may also spring a surprise by developing big production in spite of its several set-backs.

An executive of one of the largest producing companies in Seminole told the writer this morning he believed the Seminole district would still be making about 300,000 barrels a day at the end of 1927. Referring to the many current rumors, he stated that water trouble in the field is negligible when looked at from the standpoint of the whole pool. Out of 238 wells, less than 50 are making water. A water report as of Feb. 1 showed 40 wells making some water. At that time, there were about 190 wells producing 224,000 barrels. Since then, 48 producing wells have been added, and less than 10 have been added to the list making water.

A few wells in the field have gone to water and been abandoned, but in most cases only after they had produced large quantities of oil. Apparently there is but little pressure back of the water and it is not showing a tendency to spread rapidly.

With the decline of the past few weeks in Seminole proper, practically all wells there are now being operated at full capacity, the necessity of shutting certain wells in having been obviated by reason of decreased production and increased facilities. Therefore, present figures on Seminole production represent just about all the field is capable of making from present completions.

Production of 13 Leading Companies, Seminole District

Company	No. Wells	Production Apr. 1
Carter	53	63,612
Gypsy	30	37,240
Amerada	15	24,458
I. T. I. O.	26	22,247
Pure Oil	16	20,972
Prairie	19	20,695
Barnsdall	11	20,511
Furman	8	16,205
Tidal	20	15,315
Slick	8	14,353
Sinclair	15	14,080
Mid-Continent	19	13,930
Empire	3	11,699

Carter Oil Co., for instance, which for a number of weeks held its wells back, produced 67,000 barrels yesterday and had all except two or three of its wells on production. The Oklahoma Pipe Line Co. has completed its new ten-inch line into the field and is now filling it with oil preparatory to starting pumping. This new line will bring the field capacity up to around 298,000 barrels.

IN comparing production at Seminole at the end of this week with that of a week ago, it is noteworthy that Seminole proper dropped off nearly 10,000 barrels, while Lima increased nearly 12,000, this being given as an illustration of how the latter field may be expected to hold up the district's output.

On April 2, Lima had 14 wells producing 39,532 barrels daily, as compared with eight wells making 27,838 barrels a week ago. Not all of the six added are in the Wilcox sand, there being a small amount of production from three wells in upper formations. All these wells are drilling ahead for the Wilcox. The production for the field as given above does not include a well drilled in today, with initial production of 130 barrels an hour, or better than 3000 barrels a day.

This well was the I. T. I. O. Co. No. 5 Goforth, in the NEc SE of 15-8-6, about a half-mile east of the same company's discovery well in the same sec-

Drilling Operations, Seminole District, as of April 2, 1927

Field	Locations	Rigs	Less than 2000	2000 to 3099	3100 to 3700	Below 3700	Total
Seminole*	1	11	27	14	22	45	120
Searight**	0	5	4	3	13	11	36
Lima	6	25	48	45	25	18	167
Earlsboro	4	10	11	14	23	27	89
Total	11	51	90	76	83	101	412

*Seminole includes all of township 9-6, except sections 2, 3, 4 and 10.
**Searight includes all of township 10-6, and sections 2, 3, 4 and 10-9-6.

Drilling Operations in Oklahoma, Kansas and Texas

	Apr. 2 — Week Ended					Mar. 26				
OKLAHOMA	Loc.	Rigs	Drg.	S.D.	Total	Loc.	Rigs	Drg.	S.D.	Total
Burbank	..	11	19	...	30	1	7	20	...	28
Other-Osage	16	9	37	6	68	19	19	38	5	81
Bristow-Cushing	6	7	97	6	116	6	14	88	7	115
North Oklahoma	3	11	109	34	157	4	9	111	36	160
South Oklahoma	17	19	212	34	282	22	26	222	35	305
Muskogee	..	99	39	22	70	...	12	39	20	71
Okmulgee-Bristow	5	51	131	23	210	6	52	135	20	213
Tonkawa	2	1	2	4	9	3	..	2	4	9
Seminole Dist.	28	45	476	32	581	39	59	464	34	496
Total Oklahoma	77	163	1122	161	1523	100	198	1119	161	1578
KANSAS	62	71	204	85	422	67	78	206	90	441
TEXAS										
Eastland	..	139	291	168	698	..	157	349	141	692
Midland	..	95	185	48	328	...	102	184	40	326
Panhandle	..	162	340	66	568	...	162	328	71	561
Wichita Falls	..	58	106	34	198	...	71	100	33	204
Total Texas	..	454	1022	316	1792	...	492	1006	285	1783
GRAND TOTAL	139	688	2348	562	3737	167	168	2331	536	3802

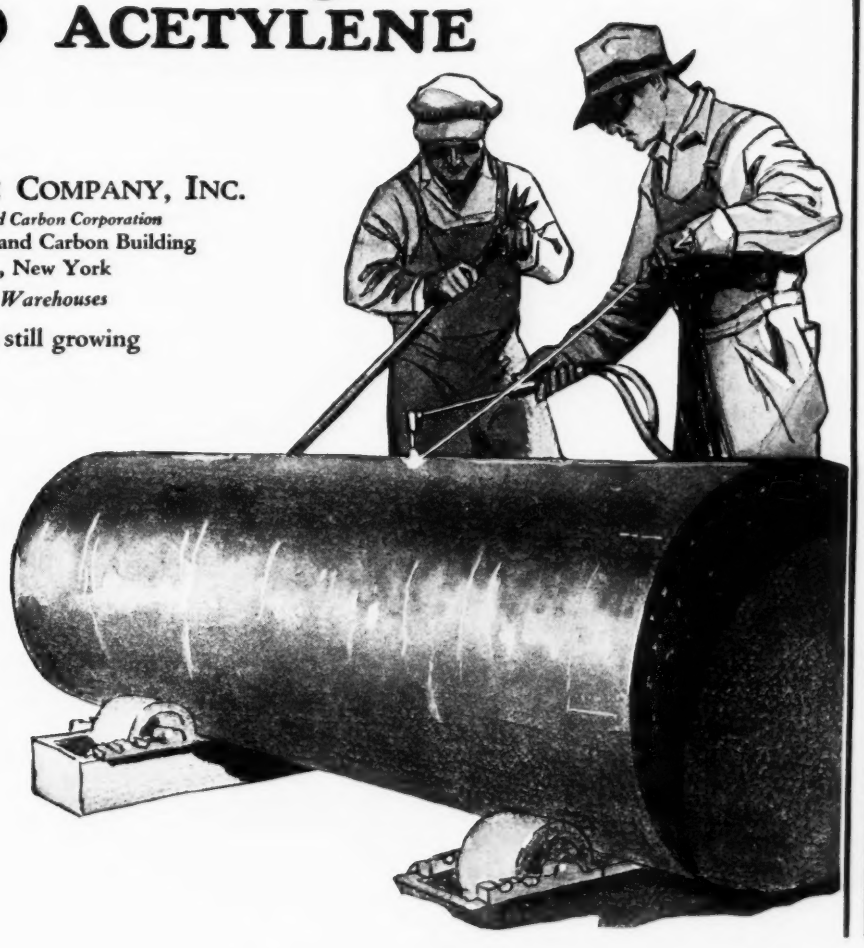
Large jobs and small— *by oxwelding*

The modern cement kiln is an industrial mammoth 8 ft. in diameter and 125 ft. long and made of heavy $\frac{5}{8}$" steel plates. It can be completely constructed by the oxy-acetylene welding process, and those so made are giving exceptionally good service. By the same method the tiny contact wires of a radio tube are joined together.

No other process of construction works so satisfactorily under different conditions. The kind, the analysis and the thickness of the metal to be welded may vary widely. The type of construction may be rugged or delicate, approximate or precise, yet the oxy-acetylene process is so flexible that it is easily adapted to every special need.

Prest-O-Lite dissolved acetylene is the original commercial welding gas. Because of it, much of the remarkable development of oxwelding and cutting has been possible.

Prest-O-Lite
DISSOLVED ACETYLENE



THE PREST-O-LITE COMPANY, INC.
Unit of Union Carbide and Carbon Corporation
General Offices: Carbide and Carbon Building
30 East 42d St., New York
31 Plants—101 Warehouses
22 years old and still growing

Completions in Eastland, Midland, Panhandle and Wichita Falls Districts, Texas, Week ended April 2, 1927

EASTLAND DISTRICT

Brown County

Company	Well Farm	Location Survey	Depth	Initial Prod.
Humble	17-Kilgore	Delgado	1176–1193	25
Humble	13-Hickman	Benson	1243–1258	32
Humble	11-Foster	Benson	1175–1196	15
Humble	13-Hodnott	Harris	1172–1194	45
Humble	7-Hodnott	Harris	1198–1212	10
Texas	17-Hickman	Benson	1209–1210	152
Tidal	8-Hodnott	Harris	1010–1025	10
Humble	9-Armstrong	Delgado	1206–1214	106
Gillman et al	15-Teston	Smith	1180–1204	150
Ramsey et al	2-Henson	Coffelt	1223–1246	175
Barbara	4-Metz	Marr	1308–1320	366
Amerada	22-Fry	Stubblefield	1300–1315	17
Barbara	7-Metz	Marr	1336–1353	250
Rex Pyramid	8-Fry	Stubblefield	1300–1310	200
Sinclair	14-Fry	Stubblefield	1284–1292	550
Sinclair	17-Fry	Stubblefield	1296–1308	435
Sinclair	18-Fry	Stubblefield	1302–1314	435
Sinclair	19-Fry	Stubblefield	1314–1324	202
Texas	30-Fry	Stubblefield	1248–1262	250
Texas	32-Fry	Stubblefield	1277–1303	400
Texas	9-Pugh	Pugh	1346–1355	5
Texas	10-Pugh	Pugh	1324–1333	71
Texas	11-Pugh	Pugh	1326–1342	10
Wentz	6-Shore	Betts	1315–1330	60
Shoup	11-Byler	T&NO	1266–1272	200
Ryan et al	1-Brooks	Hermendez	1106–1116	2M
Curry-Moore	3-Kilgore	McClure	1354	Dry
Evans et al	1-Teague	Miller	T.D.1302	Dry
Mahlstead et al	1-Chambers	Logan	T.D.1355	Dry
Van Dren et al	1-Lairs	Kinney	T.D.1275	Dry
Gillman et al	2-Perry	Rhea	T.D.1290	Dry
Cochechke	1-Duncon	Osborne	T.D. 576	Dry

Callahan County

Gibson-Johnson	1-Alvord	BOAL	T.D.2402	Dry
Gibson-Johnson	1-Finley	BOAL	T.D.1211	Dry
Warren-Hays	1-Green	D&DA	T.D. 710	Dry

Cherokee County

Humphreys	1-Stafford	Walters	T.D.5124	Dry
Humble	1-Elliott	Windsom	2685–3240	62

Coleman County

Mid-Kans	1-Dibrell	Hick	T.D.1930	Dry
Mid-Kans	2-Dibrell	Hick	T.D.1905	Dry
Sebastian	1-Chesley	Williams	T.D.1190	Dry

Eastland County

Gulf	1-Duffer	Mathis	3375–3396	312
Cranfil et al	2-Collins	H&TC	860– 870	3M
Independent	2-Snider	Lavasca	2896–2976	100
West Adams	2-Ramsour	H&TC	T.D.3771	Dry

Fisher County

Baldridge et al	1-Wheeler	Creath	3185	Dry

Jack County

Buttram	2-Preston	Siegler	2080–2090	25
Seaboard	4-Cullers	Chairs	2088–2095	40
Doublin	1-Coldellin	Hardesty	T.D.2600	Dry

Jones County

Phillips	1-Mason	TP	2522–2529	78
Phillips	3-Tessie	TP	2520–2530	197
Marland	1-Cox	TP	T.D.3030	Dry
Muse et al	1-Manly	TP	T.D.2070	Dry

Navarro County

Texas	1-Byron	White	3152	Dry

Palo Pinto County

Tex-Pac	152-Stuart	TP	1605–1618	90

Shackelford County

Milham	8-Moore	TEL	2141–1256	50
Tannehill	5-Mathews	ET	1009–1019	25
Sinclair	8-Nail	ET	T.D.2007	Dry
Rosier-Pendleton	1-A	Nail	T.D.2029	Dry
Hadley	1-Herron	TP	T.D.1547	Dry
Gwinnup et al	1-Poindexter	TP	T.D.1522	Dry
Tannehill	1-Poindexter	BAL	T.D. 621	Dry

Stephens County

Mid-Kans	6-Act	Hill	3316–3338	70

Taylor County

Sanger	1-Cox	Waler	T.D.2413	Dry

Throckmorton County

Humble	3-Stubblefield	TEL	3871–3888	85
Humble	2-Graham	TEL	1808–1819	80

Young County

Nash et al	1-Fawks	Newby	2310–2345	130

MIDLAND DISTRICT

Crane County

Company	Well Farm	Location Survey	Depth	Initial Prod.
Simms et al	1-Univ.	Univ.	2952–2940	235
Magnolia	4-O'Keefe	Univ.	2955–3005	80
Tidal	1-Lse	Univ.	2859–2948	4210
Independent	7-Taylor	Sapp	T.D.3728	Dry

Glasscock County

Plateau	1-Bell	TP	T.D.3201	Dry

Howard County

Magnolia	2-Hyman	W&NW	1600–1626	50
Gulf	2-Chalk	W&NW	1495–1887	50
Marland	1-Chalk	W&NW	1700–1714	50
Marland	1-Chalk	W&NW	1678–1688	175

Upton County

Humble	3-Ricker	Groome	2410–2424	75
Bryant	1-Baker	Denton	2251–2310	75
Roxana	14-Bowen	GCSF	2072–2136	290
Dixie	20-Burleson	Nidiver	2105–2230	127

PANHANDLE DISTRICT

Carson County

Texas	2-Bomey	I&GN	3190–3210	265
Roxana	3-Bryan	I&GN	3115–3200	100
Empire	1-Lane	I&GN	2540–2600	22M

Gray County

Phillips	1-John	I&GN	3095–3193	28
McMan	1-Osborne	I&GN	3075–3080	221
Bayshore	1-Bradford	H&GN	2470–2668	117M
Holmes	1-Coots	Lee	T.D.2990	Dry

Hutchinson County

Phillips	3-Perkins	H&GN	2969–2990	155
Phillips	4-George	H&TC	2885–2940	175
Phillips	5-George	H&TB	2806–2856	155
Midwest	2-Johnson	H&TC	2743–2800	143
Phillips	2-Wiley	H&TC	2657–2678	112
Kistler	3-Johnson	A&B	2900–2919	800
Phillips	7-Burg	Whitley	2958–2987	75
Phillips	25-Coble	M&C	2929–2950	300
Phillips	6-Whittenberg	H&TC	2844–2886	450
Skelly	5-Cunningham	D&SE	2895–2943	40
American	5-Weatherly	M&C	2976–3026	105
Collyer et al	1-Smith	M&C	2930–2945	40
Dixon Creek	52-Smith	M&C	2844–2898	300
Staggers	1-Cockrell	TC	2955–3049	90

Roberts County

Gibson	1-Jones	C&M	T.D.4010	Dry

Sherman County

Phillips	1-Johns	GH&H	T.D.3810	Dry

Wheeler County

Gibson	5-Phillips	H&GN	2263–2312	270
Angus et al	1-Bucham	H&GN	1492–1809	30M

WICHITA FALLS DISTRICT

Archer County

Pois-Schultz	3-Miller	ATNC	1587–1582	15
Mear et al	1-Wilson	DL&C	1546–1549	52
Simms-Burns	9-Turberville	Carson	1452–1467	75
Apple et al	1-Griffin	Palo Pinto	T.D.2012	Dry
Everett	1-Wilson	H&TC	T.D.1550	Dry
Roamer	1-Claggett	Henry	T.D.1411	Dry
Cristie et al	1-Key	Harris	T.D.1508	Dry
Grisham	1-Kunkel	Self	T.D.1506	Dry

Cooke County

Kewanee	19-Dennis	Moss	1278–1303	20
Hedrick	3-Kleiss	Littleton	1306–1344	25
Turman et al	1-Alex.	Gregg	T.D.2048	Dry

Denton County

Chapman et al	1-Hampton	Chessman	T.D.1255	Dry
Kelsey et al	1-Trietsch	Ayres	T.D. 700	Dry
Rondeau et al	1-Atkins	Thompson	T.D.2023	Dry

Montague County

Continental	2-Bouldin	Chambliss	T.D.1712	Dry
Continental	8-Jones	Donohoe	T.D. 795	Dry

Wichita County

Alexander et al	1-Griffin	H&TC	T.D.2004	Dry

Wilbarger County

Roxana	1-Milner	H&TC	1471–1497	68
Milham	21-Waggoner	H&TC	2337–2370	50
Milham	11-Waggoner	H&TC	2554–2556	150

N. Young County

Continental et al	5-Benson	TEL	910– 950	28
Roberts	1-Little	Holman	T.D.1325	Dry

tion. The well had the Wilcox sand at 4149 feet and was 17 feet in at last reports. Gypsy Oil Co. added a new well on its Walker farm in 15-8-6 during the week and now has two wells making 5,900 barrels daily. The new well, No. 7, in the SWc, NE SW, started off at 140 barrels an hour in the Wilcox sand topped at 4345 feet. This well is about 170 feet lower on the Wilcox than the big Carter Oil Co. well less than a half-mile to the east.

Although the Sinclair Oil & Gas Co. No. 1 Adams, in the SE SE of 22-8-6, a mile south of Lima production, is swabbing only 400 barrels a day, it is looked upon as a very important completion, as it opens up considerable territory and makes the area intervening between it and the rest of the field look good for production. This well also is low on structure, but not as low as the Gypsy well. It got the Wilcox sand at 4298 feet.

Indian Territory Illuminating Oil Co. now has more than 10,000 barrels daily production on its Livingston farm in 15-8-6, having drilled in its second well on the property the past week. Carter Oil Co. brought in its No. 1 Bowlegs in 15-8-6, now making 4890 barrels, and with its No. 1 Walker, has production of 10,300 barrels in the field. Empire Gas & Fuel Co. No. 1 Lacey, in section 14, now two weeks old, is producing 5810 barrels a day.

Seminole District Production By Companies and Leases, Mar. 25 and Apr. 1, 1927

SEMINOLE

Company	Farm	S.T.R.	Apr. 1 No. Wells	Apr. 1 Prod.	Mar. 25 No. Wells	Mar. 25 Prod.
Amerada	Fixico	23- 9-6	4	4,758	4	5,168
Amerada	Rentie	23- 9-6	4	3,650	4	3,843
Amerada	Killingsworth	23- 9-6	4	2,617	4	2,657
Total Amerada			12	11,025	12	11,668
Atlantic et al	Cudjo	35- 9-6	3	6,945	3	5,600
Atlantic-Indep	Cudjo	35- 9-6	2	0	2	284
Total Atlantic			5	6,945	5	5,884
Barnsdall	Carter	24- 9-6	9	11,753	9	10,743
Barnsdall	Jones	34- 9-6	2	8,758	4	10,220
Total Barnsdall			11	20,511	13	20,963
Carter	B. Carter	24- 9-6	2	210	2	165
Carter	J. Carter	24- 9-6	4	90	4	175
Carter	F. Carter	23- 9-6	4	1,715	4	2,100
Carter	Cudjo	35- 9-6	3	4,890	3	6,690
Carter	W. Cudjo	34- 9-6	1	2,225	1	135
Carter	Kanpp.	13- 9-6	3	3,420	4	3,542
Carter	Killingsworth	23- 9-6	10	10,340	9	9,540
Carter	Grisso	23- 9-6	6	8,525	6	6,395
Carter	Lukes	27- 9-6	3	5,545	2	6,020
Carter	Strothers	34- 9-6	1	2,940	1	3,135
Carter	Gilliland	27- 9-6	1	2,650	1	300
Carter	Vierson	23- 9-6	2	595	0	0
Total Carter			40	43,145	37	38,197
Empire	Wilson	34- 9-6	2	5,889	2	5,231
Gypsy	Butler	35- 9-6	3	2,350	3	2,204
Gypsy	Carter	24- 9-6	8	3,089	8	3,882
Gypsy	Fixico	26- 9-6	5	222	5	247
Gypsy	Harjo	25- 9-6	1	1,717	1	1,001
Gypsy	Wolfe	26- 9-6	3	3,532	3	5,082
Total Gypsy			22	10,910	22	15,416
Independent	Fixico	26- 9-6	8	1,866	8	1,946
Independent	P. Fixico	23- 9-6	2	0	2	1,590
Ind.-Interocean	Jones	26- 9-6	4	1,168	4	1,761
Total Independent			14	3,034	14	5,297
I. T. I. O	Bowlegs	26- 9-6	7	4,363	7	5,041
I. T. I. O	Goodin	23- 9-6	3	995	3	1,057
I. T. I. O	Harjo	23- 9-6	4	1,603	4	1,528
I. T. I. O	James	24- 9-6	5	1,543	5	1,850
I. T. I. O	Reed	24- 9-6	3	40	3	43
Total I. T. I. O			22	8,544	22	9,519
Kingwood et al	Johnson	22- 9-6	5	4,863	4	4,992
Magnolia	Franks	25- 9-6	2	3,310	2	2,428
Mid-Continent	Rentie	14- 9-6	8	3,820	7	4,155
Mid-Continent	Tayeche	24- 9-6	7	2,105	7	745
Total Mid-Continent			15	5,925	14	4,900
Mid-Kansas	Johnson	25- 9-6	1	0	1	1,158
Mid-Kansas	Cully	3- 8-6	1	576	1	602
Total Mid-Kansas			2	576	2	1,760
Philmack	Butler	35- 9-6	1	1,695	1	1,950
Phillips	Strothers	27- 9-6	1	0	1	0
Prairie	Carter	10- 9-6	1	55	1	60
Prairie	Gross	25- 9-6	5	225	5	410
Prairie	Strothers	27- 9-6	5	10,010	5	13,030
Prairie	Spencer	13- 9-6	1	35	1	30
Total Prairie			12	10,325	12	13,530
Pure	Strothers	26- 9-6	16	20,972	16	26,589
Roxana	Harber	22- 9-6	1	494	1	592
Roxana	Lashley	22- 9-6	1	256	1	23
Total Roxana			2	750	2	615
Sinclair	Carter	13- 9-6	2	50	2	45
Sinclair	Cudjo-A	35- 9-6	6	4,180	6	6,395
Sinclair	Cudjo-B	35- 9-6	3	5,915	3	6,890
Sinclair	Fixico	23- 9-6	2	2,530	2	2,320
Total Sinclair			13	12,675	13	15,650
Slick, T. B.	Franks	35- 9-6	6	8,783	6	9,542
Slick, T. B.	Giblet	35- 9-6	1	1,505	1	921
Slick, T. B.	Cudjo	35- 9-6	1	4,065	1	4,892
Total Slick			8	14,353	8	15,354
Superior	Cudjo	35- 9-6	4	4,830	4	6,084
Texas Co	Mayhue	14- 9-6	1	445	1	490
Tidal	Carter	24- 9-6	4	3,830	4	4,485
Tidal	Mahardy	24- 9-6	4	910	4	1,165
Tidal	Fixico	26- 9-6	5	6,575	5	8,890
Tidal	Harjo	23- 9-6	5	520	5	605
Tidal	Tayeche	25- 9-6	2	3,480	2	3,840
Total Tidal			20	15,315	20	18,985
Turman	Cudjo	35- 9-6	4	8,064	3	6,766
Turman	Grisso	35- 9-6	1	2,620	1	2,471
Turman	Jones	34- 9-6	3	5,521	1	567
Total Turman			8	16,205	5	9,804
TOTAL SEMINOLE PROPER			238	222,217	230	232,306

SEARIGHT

Company	Farm	S.T.R.	Apr. 1 No. Wells	Apr. 1 Prod.	Mar. 25 No. Wells	Mar. 25 Prod.
Carter	Davis	4- 9-6	5	5,170	4	5,505
Carter	Frazier	3- 9-6	2	3,800	2	3,840
Carter	Stewart	34-10-6	2	975	2	1,465
Carter	Scott	26-10-6	1	80	1	50
Carter	Kiker	2- 9-6	1	32	1	78
Total Carter			11	10,057	10	10,938
Gypsy	Cudjo	4- 9-6	1	672	1	1,492
Mid-Continent	Grayson	34-10-6	3	7,330	3	7,705
Prairie	Kinkade	33-10-6	6	10,350	6	7,965
Prairie	Houck	33-10-6	1	20	0	0
Searight	Youngblood	33-10-6	2	0	2	0
Sinclair	Polly	3- 9-6	1	1,005	1	1,025
Twin State	Cudjo	4- 9-6	1	270	1	260
TOTAL SEARIGHT			26	29,959	24	29,385

LIMA

Company	Farm	S.T.R.	Apr. 1 No. Wells	Apr. 1 Prod.	Mar. 25 No. Wells	Mar. 25 Prod.
I. T. I. O	Livingston	15- 8-6	2	10,260	1	5,176
I. T. I. O	Davis	13- 8-6	1	3,201	1	3,185
I. T. I. O	Walker	15- 8-6	1	242	0	0
Total I. T. I. O			4	13,703	2	8,361
Carter	Walker	15- 8-6	1	5,520	1	6,765
Carter	Bowlegs	15- 8-6	1	4,890	0	0
Total Carter			2	10,410	1	6,765
Empire	Lacey	14- 8-6	1	5,810	1	6,295
Roxana	Taylor	16- 8-6	1	168	1	0
Amerada	Roscoe	15- 8-6	1	3,000	1	4,020
Gypsy	Walker	15- 8-6	2	5,946	1	2,377
Sinclair	Adams	22- 8-6	1	400	1	20
TOTAL LIMA			12	39,532	8	27,838

EARLSBORO

Company	Farm	S.T.R.	Apr. 1 No. Wells	Apr. 1 Prod.	Mar. 25 No. Wells	Mar. 25 Prod.
Amerada	Anderson	15- 9-5	2	10,433	2	10,644
Gypsy et al	State	16- 9-5	3	16,497	3	17,201
Gypsy	Earl	16- 9-5	1	2,840	1	3,115
Gypsy	Bora	16- 9-5	1	275	0	0
Total Gypsy			5	19,612	4	20,316
Prairie	Baker	24- 9-5	1	75	1	480
Magnolia	Holmsley	11- 9-5	1	117	0	0
Mid-Continent	McCumber	9- 9-5	1	475	0	0
Shallow Sand			23	4,900	22	5,100
TOTAL EARLSBORO			33	35,642	29	36,540
GRAND TOTAL SEMINOLE DISTRICT			309	327,350	290	326,069

SUMMARY

Prod. Sand	No. Wells	Production
Wilcox	245	315,450
Hunton	41	7,000
Earlsboro	23	4,900
Total	309	327,350

Average Per Well, Wilcox Sand	1,246.8
Average Per Well, Hunton Lime	170.7
Average Per Well, Earlsboro Sand	213.0
Average Per Well, Entire District	1,059.4

Completions in North Louisiana and Arkansas, Week Ending Apr. 1

LOUISIANA

Cartersville—Bossier Parish

Company	Well	Location	Depth	Yield
Woodley & Collins	L. & A. Co. No. 2	14-23-12	3081	90

Caddo Parish—Vivian District

Company	Well	Location	Depth	Yield
Lewis Oil Corp	Caddo M.L.Co.No.9	24-22-15	1070	20

Caddo Parish—Caddo District

Company	Well	Location	Depth	Yield
J. W. Burton	Bunker & Thomkins No. 15	18-21-15	1057	15
Double H Oil Co	Spell No. 9	15-21-15	1705	25
Standard Oil Co. of La	Stiles No. 177	33-21-16	1835	50
Texas Company	Curtis No. 6	14-20-15	2210	1000
Texas Company	Harrell No. 56	4-21-16	2410	20
Woodley Pet. Co	Muslow Oil Co.No.3	32-21-15	1690	25

Richland Parish

Company	Well	Location	Depth	Yield
Ruston Drilling Co	O'Neal No. 1	35-17-6E	2508	5m. gas

EAST TEXAS

Harison County—Waskom

Company	Well	Location	Depth	Yield
Baban et al	Furrh No.2 J.Lipscomb HRS		960	10m. gas

Panola County

Company	Well	Location	Depth	Yield
Magnolia Pet. Co	Robert Johnson No.5 Jas. Johnson HRS		1930	20

ARKANSAS

Smackover

Company	Well	Location	Depth	Yield
Middlesex Oil Co	Shirey No. 4	36-15-17	2295	25
Magnolia Pet. Co	Hamilton Smith No.4	36-15-17	2278	10
W. R. Keever	Hicks No. 2	27-15-16	2015	10
Lion O. & R. Co	Flenniken No.A-9	10-16-15	1967	30
Lion O. & R. Co	Hardy-Murphy No. 2	9-16-15	2315	300
Lion O. & R. Co	Murphy B-7	8-16-15	2770	10m. gas
Ramage et al	Lawton C-11	10-16-15	2401	100

Lisbon

Company	Well	Location	Depth	Yield
Humble O. & R. Co	G. H. Goodwin No. 6	20-17-16	2200	20

Urbana—Hillsboro

Company	Well	Location	Depth	Yield
Marine Oil Co	Thompson B-1	10-18-13	2707	60m. gas

Completions in Oklahoma and Kansas, Week Ending April 2

OKLAHOMA

Caddo County

Company	Well No.	Location Survey	Depth	Initial Prod.
Gorton	2	NWc SW NW	2680–2689	15

Carter County

Company	Well No.	Location Survey	Depth	Initial Prod.
Humble	11	SEc NW SW 18-1-3W	2785–2801	212
Magnolia	4	NEc SE SW 18-1-3W	2704–3200	350
Merick et al	1	S½c NW SW 20-1-3W	2964–3071	95
Magnolia	3	NWc SE 33-1-3W	2434–2725	74
Magnolia	10	NWc NE SE 3-2-3W	2342–3005	90
Magnolia	9	NEc 10-2-3W	2570–3042	150

Comanche County

Company	Well No.	Location Survey	Depth	Initial Prod.
Bentley et al	1	SWc NE NW 29-1-12W	T.D.2947	Dry

Creek County

Company	Well No.	Location Survey	Depth	Initial Prod.
Empire	8	SEc NW SW 30-15-8E	3247–3258	41M
Texas	14	NEc NW SW 1-18-11	2058–2069	50
Savoy et al	1	NE 6-18-12	2141–2153	25
Wheeler	17	NE 6-18-12	2252–2255	10
Whitten et al	3	SWc NE 11-17-10	1952–1970	15
Love et al	2	NEc SE NW 21-16-9	2980–3032	15
Texas	1	SWc SE NE 31-15-9	1203–1248	42
Atlantic et al	1	NEc 10-14-10	2665–2715	30
Prairie	1	SEc NE SE	3465–3487	91
Savoy et al	1	Blk 9	T.D.2270	Dry
McCullough et al	1	NEc SE 4-17-8	T.D.8590	Dry
Sherry et al	1	CSL N½ SE 2-19-9	T.D.2647	Dry
Riverland	9	NWc 1-18-11	T.D.2109	Dry
Bu-Vi-Bar	1	C SW NE 18-17-9	T.D.3440	Dry
Sherry et al	1	SWc NW NW 7-16-12	T.D.2776	Dry

Garfield County

Company	Well No.	Location Survey	Depth	Initial Prod.
Sinclair	22	NWc SE NE 25-22-4	2280–2297	335

Garvin County

Company	Well No.	Location Survey	Depth	Initial Prod.
Fisher et al	1	NEc SW 25-3-1W	T.D.3000	Dry

Grady County

Company	Well No.	Location Survey	Depth	Initial Prod.
Sinclair	5	SWc SE SE 22-5-8W	T.D.2380	15M
Meridian	1	C NE NE 10-4-8W	2160–2397	11M
Carter	1	SWc SE NW 8-3-5W	2205–2211	85
Carter	1	NWc 16-3-5	1792–1806	15
Carter	4	SEc SE SW 16-3-5W	1779–1798	100
Carter	2	SWc 22-3-5W	1820–1840	10
Carter	3	SEc SW SW 22-3-5	1823–1832	35
Carter	3	SWc SE NW 27-3-5W	1780–1821	20
Carter	5	NWc NE SW 27-3-5W	1805–1810	90
Carter	6	SWc NE SW 27-3-5W	1783–1786	120
Magnolia	5	NEc SE NE 28-3-5W	1751–1755	10M
Briscoe-Hall	1	SEc SW 6-3-5W	T.D.2215	Dry
Carter	2	SWc SE NW 35-3-5W	T.D.1525	Dry

Hughes County

Company	Well No.	Location Survey	Depth	Initial Prod.
Transcontinental	12	SWc SE SW 26-9-9	T.D.3772	Dry

Jackson County

Company	Well No.	Location Survey	Depth	Initial Prod.
Pet. Invest	1	CSL SW NW 15-1-20W	T.D.3050	Dry

Kay County

Company	Well No.	Location Survey	Depth	Initial Prod.
Comar	4	NEc SE SE 20-29-1W	3405–3420	66
Comar	1	NEc 29-29-1	3454–3517 OWD	9
Marland	2	NEc SE NW 17-29-1E	1950–1970	15M
Hag	1	NEc NW 29-27-1E	900– 923	15M
Braman	2	CSL SW 5-28-1W	2876 OWD	Dry
Miss. Valley	2	C SE NE 3-27-2E	T.D.4007	Dry
Blackwell et al	3	NEc NW NW 7-26-1W	T.D.3682	Dry

Muskogee County

Company	Well No.	Location Survey	Depth	Initial Prod.
Bradley	1	SWc SE 5-14-19E	T.D.1510	Dry
Newport et al	1	NWc 16-15-17E	T.D.1440	Dry

Okfuskee County

Company	Well No.	Location Survey	Depth	Initial Prod.
Morgan et al	2	NWc NE NW 19-10-11	T.D.3725	Dry

Okmulgee County

Company	Well No.	Location Survey	Depth	Initial Prod.
Gray et al	4	C SE 23-15-12	2670–2688	40
Texas	1	SEc SW NE 3-.5-14	1554–1567	5
Platt et al	10	NEc SW SE 22-14-14	1240–1290	10
Savoie	3	CWL SE SW 24-15-12	T.D.1640	Dry
Link	2	NWc SW NE 17-14-15	T.D.2632	Dry
Roxana et al	10	CEL SE NW 15 13-14	T.D.2464	Dry

Osage County

Company	Well No.	Location Survey	Depth	Initial Prod.
Phillips	6	NEc SW SW 1-27-5E	2963–2991	60
Blackwell	1	NWc NE SW 5-27-11	2219–2222	3¼M
Skelly	11	NWc SW NW 28-26-6	2915–2967	258
Texas	19	SWc NE 30-25-8E	2412–2432	157
59-Osage	37	SWc NW NW 9-24-12	1642–1682	5
Delmar	2	NWc SW SE 17-22-10	2476–2494	612
Prairie	5	21-25-8	2470–2501	360
Branstetter	2	NEc NW 23-22-9	T.D.2525	Dry

Pawnee County

Company	Well No.	Location Survey	Depth	Initial Prod.
Josey	6	SWc SE SE 21-20-6	3036–3056	20

Pottawatomie County

Company	Well No.	Location Survey	Depth	Initial Prod.
Gypsy	3	SEc NW 16-9-5	4280–4282	2942
Gypsy	4	NEc SW NE 16-9-5	4315–4316	6232

Seminole County

Company	Well No.	Location Survey	Depth	Initial Prod.
Texas	2	NFc SE 10-9-5E	3517–3544	212
Amerada	3	NWc SW NW 15-9-5	4252–4273	4104
Gypsy	1	SWc SE NW 11-9-5E	3504–3536	717
Twin State	1	NEc SE NW 4-9-6	4438–4441	380
Mid-Cont	7	SEc SW 24-9-6	3977–3993	100
Tidal	5	NWc NE SW 24-9-6	3872–3913	15
Tidal	5	SEc NW SW 24-9-6	3900–3910	360
Magnolia	2	SWc 25-9-6	4131-T.D.	1700
Barnsdall	2	NWc NE NE 34-9-6	4000–4081	6130
Gypsy	3	NEc 35-9-6	4165–4174	1830
Turman	4	NEc NW SW NW 35-9-6	4070–4095	800
Amerada	1	NEc SW 15-8-6	4191–4209	4105
Crosby et al	1	SEc NW SW 15-8-8	3264–3266	888
Dixie	3	NEc SW 32-8-8	4133–4147	115
Barnsdall et al	9	SEc NE SW 33-11-8	4125–4208	800
Wrightsman	1	SWc 35-10-6	T.D.4368	Dry
Continental Dev	1	NEc NW 1-1-9W	1857–1864	8¾M
Gamble et al	3	SEc SW SE SE 25-1-9W	2158–2178	80
Magnolia	12	SEc NE SE 25-1-9W	1232–2131	45
Ellis	7	CSL SE SE 19-1-8W	2281–2273	35
Scott	1	NWc SW SE 12-1-4W	1450–1458	25
Empire	1	NEc 5-2-8W	2176 2185 OWD	25
Carter	3	NEc SW NE 2-2-5W	T.D.2476	Dry
Mid-Carter	1	SWc NE 32-1-5W	T.D.2070	Dry
Carter	1	SEc NE NE 25-1-9W	T.D.2629	Dry

Stephens County

Company	Well No.	Location Survey	Depth	Initial Prod.
Pearce et al	2	C N½ SE 27-1-8W	T.D.1765 OWD	Dry
Malernee	2	NWc NE NE 34-1-8W	T.D.2345 OWD	Dry
Pace et al	2	SEc SW NW 12-2-8W	T.D.2315	Dry

Tulsa County

Company	Well No.	Location Survey	Depth	Initial Prod.
Suppees et al	3	C NW SW 5-17-13	T.D.1985	Dry
Holmes et al	2	C SW NW 14-19-10	T.D.1846	Dry
Holmes et al	1	NWc SE 25 19-10	T.D.2576	Dry
Suppees et al	2	CSL SW NW 5-17-13	T.D.3454	Dry
Suppees et al	2	NEc NW SW 5-17-13	1413–1431	7

Wagoner County

Company	Well No.	Location Survey	Depth	Initial Prod.
Sevreda	5	NWc SW NW SE 25-17-16	1314–1330	20
Johnson	1	SWc 36-17-16	T.D.1632	Dry

KANSAS

Butler County

Company	Well No.	Location Survey	Depth	Initial Prod.
Empire	74	SWc NE NW 20-26-5E	2478–2543	20
Phillips	1	SWc SE NE 4-27-6	2790–2813	90
Allison et al	1	NWc NE 9-27-6	3159–3164	150
Empire	10	SEc NW NE 11-28-4	2520–2538	125
National	6	NWc SW NE 26-28-5	2765–2795	10
Lel ow et al	1	NWc SE SW SW 24-26-5E	T.D.2815	Dry

Cowley County

Company	Well No.	Location Survey	Depth	Initial Prod.
Trees	1	SWc NE 30-30-4E	2865–2874	75
Twin State	2	NWc SE SE 21-31-4	2360–2401	117
Slick	2	NEc SW NE 22-32-4	2285–2367	75
Barnsdall	1	NWc SW 8-33-3	3152–3500	250
Pyle et al	1	C SE NE 16-35-4E	1750–1756	5M

Elk County

Company	Well No.	Location Survey	Depth	Initial Prod.
Union Cas	1	NWc NE 23-31-10	1643–1660	½M

Greenwood County

Company	Well No.	Location Survey	Depth	Initial Prod.
Empire	1	NEc NW SE 7-22-10	2403–2468	20
Theta	18	NEc SE NW 17-22-10	2318–2343	125
Amerada et al	1	NEc SE 9-22-12	1808–1822	20
Texas	4	SWc SE NE 9-22-12	1797–1804	15
Henderson et al	1	SEc SW NE 7-24-11	1867–1896	10
York St	1	SEc SW 29-22-11	T.D.2003	Dry
Phillips	1	NWc SW 26-23-8	T.D.2518	Dry
Elmwood et al	1	SEc NW 12-23-10	T.D.2250	Dry
McCullough et al	1	SEc 5-24-13	T.D.1726	Dry
Roth et al	11	NEc SW 12-25-8	T.D.2320	Dry

Lyon County

Company	Well No.	Location Survey	Depth	Initial Prod.
Transcontinental	12	NWc SW SW 30-21-10	2199–2213	40

Marion County

Company	Well No.	Location Survey	Depth	Initial Prod.
Frank et al	1	NEc 33-17-4	T.D.2680	Dry

Russell County

Company	Well No.	Location Survey	Depth	Initial Prod.
Wilcox	1	NEc 19-12-15W	2993–3021	60
Mid-West	31	SWc NE 5-11-15W	3035–3062	200

Sumner County

Company	Well No.	Location Survey	Depth	Initial Prod.
Vickers et al	2	SEc NW SE 24-31-2	1870–1937	500
Roxana	2	NEc SW SE 24-31-2	1858–1927	500
Roxana	3	NWc NE SE SE 24-31-2	1864–1938	350
Roxana	5	CEL E½ SE SW 25-31-2	1836–1903	500
Roxana	4	CWL NE NW SE 25-31-2	1839–1899	800
Marland	1	NEc 11-33-1	T.D.3885	Dry

NEW MEXICO

Eddy County

Company	Well No.	Location Survey	Depth	Initial Prod.
Empire	2	SWc SE 35-17-27E	T.D.1627	30

Kerr And Peters Form Marketing Firm

CLEVELAND, April 4—C. R. Kerr and E. E. Peters, formerly salesmanager and assistant sales manager respectively of the Sloan & Zook Co., Bradford, Pa., have organized the Penn Maid Oil Co., to take over the marketing business of the Sloan & Zook organization. The new company began business April 1, in offices on the third floor of the Tide Water building, Bradford. The Penn Maid took all uncompleted orders on Sloan & Zook's books and will complete them in the same manner in which they were handled under the old arrangement, it is announced by Mr. Kerr.

For some time both Mr. Sloan and Mr. Zook have been devoting most of their attention to the producing business and they were anxious to give all their time to other interests. Mr. Kerr and Mr. Peters having been in charge of the marketing end of Sloan & Zook for a long time, Mr. Kerr for 11 years and Mr. Peters for eight or nine years, they wished to continue it, hence the new arrangement was made and the new company was formed.

J. W. Long, formerly fuel oil salesman for Sloan & Zook and Miss A. M. Ryan, who was assistant to the traffic manager, have joined the new organization.

Operator's Views Should be Considered When Gasoline Plant is Designed

By L. O. Smith, Superintendent, Tidal Western Refining Co.

(Read before plant operators meeting, Association of Natural Gasoline Manufacturers, Wichita Falls, March 25)

THE satisfactory and economical operation of a plant is so dependent upon the construction that a word or two on that subject, as an introduction, should not be out of line. Some of the large companies maintain construction organizations which are usually under the engineering department, and whose job it is to complete the work within the engineer's estimate. These estimates are sometimes made without the operator's consideration, and plants are sometimes built in the same manner, usually by engineering companies who have no future contact with the operation of the plant, and some of them never had much previous operating contact. Plants built under these conditions sometimes carry operating difficulties that are hard to overcome.

One of the things that has a direct bearing on operation, and that should be considered from an operator's viewpoint, is the location of the plant site. This should be selected with a view to accessibility, drainage, sanitary living conditions, etc., but of course, oil fields are not located with these things in view, consequently plants cannot be built in ideal locations, but the above things should be considered when possible.

As actual construction begins with foundations, the first thing to consider should be the proper foundation for the machinery. Loose foundations, or foundations of concrete that were not properly made, are sure to develop a serious operating problem.

The selection of machinery should be made with the advice of practical operating men. Engines and compressors are standardized now so that this selection is not difficult, unless you are inclined to experiment. The selection of auxiliary equipment, such as pumps, air jammers, electric generators, and auxiliary engines, is very important from an operator's view, and can cause more operating difficulty than the larger equipment. Circulating pumps, both for water and oil, in the case of absorption plants, should be large enough to more than handle the work necessary, and should be so manifolded that any pump may be used for any purpose.

Standby pumps are very necessary. The circulating system is the life of the plant and good equipment should be placed in it. A good windjammer, or air pump, should be installed. In plants not located near a supply of current, it is good operating precaution to install two electric generators, one large enough to carry full load and a smaller one to generate light from a small gas engine in case of line shaft, or auxiliary engine trouble, as working in the dark is dangerous. Lights are needed most in time of trouble. By all means install a line shaft of sufficient size, and with proper bearings and clutches. More operating difficulty has developed over line shafting than any other one thing.

SHAFTING placed on the building trusses usually gives trouble by getting out of alignment, especially if long drives are used. Shafting set on concrete pillars, or in a concrete trench in the floor, is usually more satisfactory. As clutches are also a source of much operating grief, they should be carefully selected and of proper size. The outside grip clutches, both V groove and flat, are easily adjusted and are accessible when replacements of blocks or parts are necessary. A clutch should be placed on the main auxiliary drive in all plants, so that the throwing of belts on fast moving pulleys will be unnecessary. The selection of auxiliary engines depends on the horsepower required, and should be of sufficient size to develop surplus power. The auxiliary equipment being the heart of the plant provision should be made for at least two drives.

A very essential part of the auxiliary equipment is an engine small enough to be started by hand, and so installed that it will operate windjammer and small electric generator in emergencies. All auxiliary belt drives should be so arranged that excessive strain will not be required to drive the equipment. A tight belt is a sure source of operating difficulty, as well as expense. Tight belts are not necessary where installation is planned with sufficient slope to the drive belts. Line shafting in a trench below the floor level makes it possible to arrange belting almost horizontal, as well as having other advantages, such as accessibility and holding alignment.

Field lines are a source of much operating difficulty if not properly laid. Usually this is a matter that is settled on the draughtsman's board, and the nearest distance between two points is the only thing considered. Field lines should have careful planning by a practical operator; drips located according to his judgment, stream and road crossings avoided as far as is possible. Operating difficulties are avoided to considerable extent if lines are properly drained, properly buried and laid with sufficient slack to catch any liquid that field drips fail to catch.

A serious operating difficulty arises when liquid reaches the compressors or vacuum pumps, even in small quantities, and serious accidents to men and equipment have occurred on this account.

Plants should be equipped with master meters, so located that all gas entering plant be measured by one or two meters. Charts from these should be computed daily and the plant recovery calculated to gallons per 1000 for the chief's information, as soon as possible. A good many plants are still operating without this information daily. Another valuable bit of information for the plant chief is the figures giving volume of gas received from each lease as soon as this is available, so that a decrease in gas may be noted and a check made to determine the cause.

In fields where vacuum is maintained, this information is very necessary as an increase in volume may indicate air in the line, and all plant operators know the trouble that air may cause. The usual procedure on field meter charts is to send them to the main office where calculations are made. In case the office notes a variation in volume they usually write advising and asking the reason. By that time the matter is so old that no information is available. Orifice meters have almost entirely replaced the proportional meters on new installations, as they are easy to test and repair, and may be used for any size volume with change in plate sizes. Greater accuracy is claimed for the orifice meters.

ALL plants should be equipped with accurate drawings of field and plant lines, and in cases where plant lines are numerous, as is sometimes the case with absorption plants, the different lines should be drawn in different colors, or on separate plates.

As soon as the operating crew is selected they are given instruction as to duties, responsibilities, etc. As soon as possible, organization charts should be mailed showing the working plan of the organization, and to whom each man is responsible. It is also advisable to write out a list of responsibilities and duties of each man, as far as possible to do so, and have the employe add to this from time to time as new duties

are assumed, or as employee learns the various duties assigned. As the crews become acquainted with the work and become proficient, a little competition between them serves to keep the spirit up. There are numerous ways in which this may be done. One of the best is to assign each crew a certain portion of the plant and equipment to keep clean and painted for a period of time. This work should be as nearly equal as possible, but the sections assigned each crew may be changed at certain periods so that the work will be equalized in this way. Where possible to have competition between plants some very interesting things may be developed, such as lube oil used per unit, fuel burned per horse power, etc.

Mechanical upkeep of plants is very essential. If the equipment is allowed to get in rundown condition, operating difficulties pile up so fast that the best crews will get discouraged. The surest way to maintain plant equipment is to give immediate attention to small repairs. If this is done the equipment will never get in bad condition. The chief engineer of the plant may save a lot of money in both time and material by attention to small repairs, or spend a lot of money by his negligence.

Plant men should be given first aid instruction, and teams organized where enough men are employed. Special attention should be given to instruction in artificial respiration, stopping the flow of blood and to first aid treatment of burns. Instruction should be given in fire prevention and fire fighting. Fire drills should be a regular part of the operating routine. At each drill instruction should be given in the use of some part of the equipment, and an occasional demonstration with actual fire under conditions similar to what might be expected, is excellent training. An inspection of all guards, gear covers, railings, fire extinguishers and fire fighting equipment should be made at set periods, and condition noted.

THE field men, such as air testers, meter readers, line walkers, drip pumpers, etc., should have special instruction regarding their contact with producers and lease men. There is sometimes a lot of friction due to these men not giving proper thought to complaints or questions from field men. One of the most serious difficulties in some fields is the supply of residue available for return to the leases for operating pumping equipment. Or, rather, the lack of supply. A producer is suffering a loss, and in case of a complaint from him to any of the field men, they should see that the matter gets attention, or that it is immediately reported to someone who can give it attention.

One of the things necessary to plant operation is plenty of good water. Water containing lime or magnesium salts is the source of much trouble and expense, as the scale caused by the lime and magnesium salts clogs engine and compressor jackets and water lines. Treating the water with lime and soda ash is effective in cases where there isn't an excess of magnesium, and if properly done, beneficial results may be obtained even though an excess of magnesium is present. Circulating systems should be so arranged that water may be pumped over cylinders, or may flow by gravity in case pumps are down for a short time, as might be the case when a belt breaks, or pump has to be repacked. Good drinking water is also very necessary, and bacteriological analysis should be made in case there is doubt as to the purity of the drinking water.

Leaks of all kinds are expensive around plants, gas and gasoline leaks are especially so. Gas leaks usually occur around valve stems, piston rod packings and through relief valves that have not been properly ground. Gasoline leaks usually occur at the valves on the accumulator tank drains and the oil separator draw off valves. Leaks of this kind are dangerous and expensive. A careful engineer will insist on two valves being placed on drains that are frequently used, and will always make sure that valves are not dripping when he is through using them.

ONE of the greatest plant operating difficulties is air in the gas, especially where high vacuum is maintained on wells in the field. The gasoline yield is affected to a certain extent as the air per cent increases. However, the effect of a certain per cent of air is not the same on all gases. The richer gases are apparently not affected as much as lean gases. The effect of air on the gasoline recovery is not the only trouble caused by its presence. Usually plants are designed for a certain load and in new installations, there is usually no surplus units, or capacity, and as the air per cent increases the machinery becomes overloaded, and this is no small difficulty with internal combustion engines. Another difficulty caused by air in the gas is that the machinery is usually set to run with a certain mixture, and this mixture usually being residue from the accumulator tanks, is seriously affected by a sudden increase in percentage of air, such as might be caused by the carelessness of a production employee in turning a well in, or out, of the line. It is not unusual for a plant to have every unit stop on this account.

Physical testing to determine gasoline content is one of the points of contention that is never handled to the entire satisfaction of producers. Most producers have been advised that natural gas continually increases in gasoline content, and they expect just this. Very few producers, or lease men, are familiar with the gasoline business, and if they were told that a well might show a gasoline content in the morning that would not check a test made at noon, and that the morning or noon test might not check a test made late in the afternoon, he would probably think that someone was trying to kid him. However, this very condition is possible in fields where wells are pumped during the day time only, and where they head up with oil in the hole at night sufficient to partially shut off the flow of gas from the hole in the early morning before the well starts pumping. The presence of air has a more serious effect on the gasoline recovery from the field test cars than it does upon a well constructed plant. Producers realize this and the quarterly test serves to keep the air down in the field lines as producers usually insist that wells be in good condition for some time prior to the physical test.

Field test cars should be in the very best mechanical condition at all times. A well kept test car indicates to the producer that the equipment is in first class condition, and that he might reasonably expect an accurate test. Test car meters should be tested frequently, as an inaccuracy might easily occur after a dozen tests, especially where tests are made under vacuum. It is unnecessary to add that test machines should be entirely free from leaks.

The various automatic regulators and controls have done much to assist the operator. So have the charts and records that have been developed. Generally speaking, automatic devices and controls should be limited to as few as possible, rather than going to the extreme and trying to regulate everything automatically. The absorption plant requires quite a lot of automatic regulation, as there are usually several temperatures to control, as well as pressures and liquid levels.

Plant difficulties are usually multiplied in freezing weather, and the preparation for winter is an important part of plant operation. Dead lines, whether gas, air, steam, oil or water, should be eliminated as far as possible, as they have a habit of bursting at a time least expected, and in most inaccessible places. Water lines, valves, and connections should be carefully checked to see that they are protected. A lot of damage is caused each winter on account of bursting pumps. Pumps, not in use, should be disconnected, and have heads loosened so that no liquid can accumulate in the cylinders. In extremely cold weather ice has been known to form on cooling coils in quantities sufficient to break down the coil supports. Cooling towers are subject to the same hazard unless carefully watched and precautions taken.

WHILE operating difficulties are not so great in summer, very few plants have an abundance of water, and the water supply equipment should have careful inspection before the hottest weather arrives, and all available water storage should be filled to the top at all times. Another summer job, while not classed as an operating difficulty is the setting out of trees, shrubs, etc., and the planting of grass and flowers. Men take pride in the appearance of their plant, and pride in plant appearance is far from being an operating difficulty.

Over Half of Mexico's Output in Hands Not Accepting Land Rulings

By Paul Wagner
N. P. N. Staff Writer

HOUSTON, April 2

SIX operating interests in Mexico, controlling 82 per cent of that country's oil production in December, included only one American company that had complied with the Mexican government's land rulings, and taken out confirmatory concessions on properties acquired prior to May 1, 1917. It was on this date that the land rulings in controversy at present were embodied in the Mexican constitution.

The American company which has complied is the International Petroleum Co., with about seven per cent of the 195,750 barrels daily average production in December of the Tampico district.

Oil companies of the European-owned Royal Dutch Shell group, which are said to be in sympathy with the American stand against certain portions of the land laws applying to properties acquired prior to the Constitution of 1917, have taken out confirmatory concessions on part of their outlying holdings acquired prior to that date. The Royal Dutch Shell group controlled about 19 per cent of December production.

It appears, therefore, that about 56 per cent of Mexico's production in December was in the hands of four American interests which have not accepted the Mexican government's land rulings. Most of the smaller companies have manifested their properties in accordance with the rulings, with the exception of the New England Fuel Oil Co., the Mexican corporation subsidiary to the Atlantic Refining Co., and a few others with negligible quantities of current production.

Virtually all oil companies have accepted the Mexican government's rulings on lands acquired after the Constitution of 1917 was adopted. They maintain in most cases, however, that international law allows them to maintain their own title to lands acquired prior to the new constitution of 1917, which set forth the principle that all oil lands, regardless of previous titles, reverted back to the nation.

THESE same six interests, now controlling 82 per cent of Mexico's daily production, have taken out more than two-thirds of the total oil recovery in the Tampico district.

Total production in Mexico, from the beginning of oil development down to January 1, 1927, had reached 1,413,701,287 barrels. The six operating interests mentioned had taken out 1,059,308,659 barrels in the following ratio:

Sketch map showing relation of pools along the "Golen Lane," the southern or light oil district

	Barrels
Pan American	344,160,993
Royal Dutch-Shell	333,561,051
Transcontinental	120,023,961
Mexican Gulf	103,517,882
International	83,546,089
Sinclair	74,498,683

MORE than 37 per cent of the total December daily average production was controlled by Pan American Petroleum & Transport Co., through two field subsidiaries, the Huasteca Petroleum Co., and Mexican Petroleum Corp.

Pan American's daily average production was 735,424 barrels, divided between 39,084 barrels of the Huasteca, in the South country, and 37,340 barrels of the Mexican Petroleum in the Panuco district.

The foregoing figures take no account of 3760 barrels daily produced by Huasteca in partnership with the National Railways of Mexico in the heavy oil territory.

Royal Dutch-Shell, with more than 19 per cent of the country's daily production, produced 12,730 barrels of South country crude and 349 barrels of Panuco heavy oil daily through the stock-controlled Mexican Eagle Oil Co., Ltd. (El Aguila). The direct arm of the Royal Dutch-Shell in Mexico, "La Corona," produced 13,894 barrels in the Panuco district and 973 barrels in the light oil territory daily.

Transcontinental Petroleum Co., subsidiary of the Standard Oil Co. of New Jersey; International Petroleum Co., subsidiary of the Mexican Seaboard Oil Co. of Maine; and the Mexican Gulf Oil only other operating interests in Mexico with more than 10,000 barrels daily production. Together, their production represented barely 20 per cent of the country's daily average.

The Transcontinental produced 15,094 barrels daily, of which 14,533 barrels came from the Panuco heavy oil district; International took out 14,418 barrels of which 12,156 barrels came from the heavy oil territory; Mexican Gulf Oil Co. produced 11,711 barrels, of which 7267 barrels came from the Panuco district.

Sinclair Mexican interests, with 9548 barrels daily, made up the sixth operating group figuring in control of 82 per cent of the country's daily average total. No other operating interest with the exception of the National Railways of Mexico had more than 5000 barrels daily production in December. The National Railways had 5397 barrels, daily average, exclusive of production owned jointly with the Huasteca.

THE present "stripping well" character of South country light oil production is indicated by reference to December daily averages of fields along the "Golden Lane" of the past in comparison with total recoveries down to January 1, 1927. Present yields and total recoveries are set out separately for each "high spot" in the accompanying summary: Table No. 1.

A sketch map provides a key to the location of fields along the faulted-fold in the Southern district.

The Tuxpam district, along the river of the same name, includes in the accompanying table the Penn-Mex Fuel Co.'s Alamo-Jardin development and the Huasteca's Chapapote Nunez-Tierra Blanca "high spot." The total Tuxpam district recovery of 105,851,722 barrels divides as follows: Chapapote Nunez-Tierra Blanca, 62,464,561 barrels, and Alamo-Jardin, 43,171,951 barrels.

Both the Lower Cerro Azul and the Chapapote Nunez-Tierra Blanca "high spots" have been, at times, treated as reserves by the Huasteca; when it was desirable to hold back production in favor of what were previously competi-

tive areas. The condition mentioned continues to some extent in both these unit-controlled "high spots."

Details of South country production by fields follows:

Table 1—South Country Production in Mexico

	Daily Average Prod. Dec. 1926	Total Production to Jan. 1, 1927
San Geronimo—San Miguel—Chiconcillo	1,131	6,612,876
Tepetate—Juan Casiano	3,009	120,022,962
Southern Chinampa—Los Naranjos	7,751	181,825,834
Southern Amatlan	9,211	73,464,278
Zacamixtle	949	12,287,459
Toteco—Upper Cerro Azul	12,997	150,133,568
Lower Cerro Azul	10,600	89,189,634
Alazan—Potrero del Llano—Cerro Viejo	3,910	118,078,863
Tierra Amarilla	159	480,504
Tanhuijo—San Marcos—San Sebastian		373,667
Tuxpam District	20,318	105,851,722
Furbero Field	354	1,435,396
Total	70,389	859,756,763
Total Production for the year of 1926		31,278,852
Total Production in December, 1926		2,182,059

IN the General Panuco territory, principal operations in the last two years have been eastward from Ebano and in the Corcovado area, since the development of Cacalillao. The divisions mentioned lie north and northwest of original Panuco development.

Southwest of Ebano and west of original Panuco development, the Limon hacienda has produced 1,343,263 barrels of heavy crude for Marland Oil Co. of Mexico, which in December averaged roundly 3000 barrels daily from the property. Limon is included under miscellaneous classification in Table No. 2, which summarizes Panuco district production as follows:

Table 2—Panuco District Production Summary

	Daily Avg. Prod.Dec.1927	Total Prod. to Jan.1 1927
Topila	2,696	22,686,735
Isleta	2,565	26,495,300
Panuco	17,767	241,604,900
Cacalillao	36,186	175,075,039
Elbano	41,429	69,026,206
Corcovado	16,574	15,282,065
Miscellaneous	8,170	3,894,279
Total	125,387	553,944,524
Total Production for the year of 1926		57,743,874
Total Production in December 1926		3,886,997

Table 3—Southern District Production by Companies

Companies	Daily Average Prod. Dec. 1926	Total Production to Jan. 1, 1927
Pan American Petroleum & Transport Co., (Huasteca Petroleum)	59,084	277,235,746
Mexican Eagle Oil Co., (El Aguila)	12,730	229,548,637
Mexican Gulf Oil Co	4,505	72,495,064
International Petroleum Co	2,262	49,208,231
Penn Mex Fuel Co	215	43,387,161
Cias. del Agwi	2,647	36,997,685
Transcontinental Petroleum Co. (Standard of New Jersey)	2,561	32,357,011
Metropolitan Oil Co	879	25,020,797
The Texas Co. of Mexico, S.A.	781	18,235,453
Cia. Mexicana Holandesa "La Corona"	973	13,322,020
Cortez Oil Co	1,289	12,443,075
Sinclair Mexican Companies	389	11,572,172
Inversiones (Buckley)	278	6,989,240
Merriweather—Gonzales et al.	679	5,451,505
New England Fuel Oil Co. (Azteca)	60	5,085,346
Union Oil Co		4,661,518
Ellsworth—Nelson et al		2,667,268
Cia. Petroleum Cosmos	365	2,646,386
Indiana Mex		1,614,903
Nibbi-Hichman	111	1,474,935
Empire Gas & Fuel Co		1,122,696
Morrison & Co		1,107,542
Mexican Fuel Oil Co. (Pierce)	170	1,000,367
Tide Mex Oil Co		916,778
Continental Mexican Pet. Co	26	874,669
Price et al		732,459
Rivers et al	224	702,559
Northern Petroleum Co		324,134
Cia. La Financiera	101	283,326
Schlaet et al		121,114
Tampico Amatlan	17	81,668
Peiper et al	35	75,298
Total		859,756,763

Table 4—Panuco District Production by Companies

Companies	Daily Average Prod. Dec. 1926	Total to Jan. 1, 1927
Cia. Mexicana Holandesa "La Corona"	13,894	90,690,394
Transcontinental Petroleum Co. (Standard of New Jersey)	14,533	87,666,950
Mexican Petroleum Corp	37,340	66,925,247
Sinclair Mexican Companies	9,159	62,926,511
International Petroleum Co	12,156	34,337,858
East Coast Oil Co. of Mexico, S. A., (Southern Pacific)	2,317	32,825,891
Mexican Gulf OilCo	7,267	31,022,818
The Texas Co., of Mexico, S.A.	996	24,737,212
New England Fuel Oil Co	1,269	22,162,769
Panuco Boston Oil Co	598	8,124,076
National Railways of Mexico	5,397	7,471,616
Richmex Oil Co	597	7,232,366
Vera Cruz Mexican Oil Synd	115	6,344,281
Tavlez Oil Co	9	6,057,186
Empire Gas & Fuel Co	926	5,602,052
La Espuela Oil Co	155	4,204,387
Mexican Atlas Oil Co	1,392	3,967,205
Mexico Boston Leasing Co	170	3,597,323
Globe Petroleum Co	1,018	2,235,883
Credito Petroleum Co	519	2,124,510
National Oil Co	254	2,085,063
White et al	206	2,034,187
Cia. La Meridional		2,045,535
Tropical Oil Co		1,846,507
Mexican Fuel Oil Co. (Pierce)	229	1,818,173
Cia. El Sol	519	1,792,871
Penn Mex Fuel Oil Co		1,808,050
English Oil Co	68	1,702,538
Itamex Oil Co	489	1,634,456
Caltex Oil Co	70	1,547,646
Cia. La Normexus		1,516,070
Marland Oil Co	2,910	1,343,263
Mexican Oil Products Co	173	1,459,804
Williamson et al	55	1,428,212
Nibbi & Co	126	1,374,303
Mexican Eagle Oil Co. (El Aguila)	349	1,204,729
Cia. Regiones Petroliferous		1,202,494
Picher-San Cristobal		1,169,090
Cia. La Mexico	102	1,154,187
H. G. Venable et al	1,421	903,374
Kern Mexican Oil Co	432	955,831
Thomas & Co	121	946,221
Hispana Mexicano		858,551
Von Phul et al	523	753,757
Kone & Willis et al		799,524
Martima Oil Co	62	593,236
Boatner et al	412	570,034
Mallory & Nibbi	40	542,661
Texas Mexican Petroleum Co		507,054
Hispano Cubano		464,889
Vera Cruz Mexican Oil Co	562	431,544
Mexican Crude Oil Co	367	428,566
Cia. La Universal		389,182
Panuco Tuxpam Oil Co		371,256
Natl. Rail. & Huasteca Pet. Co.	3,760	239,343
Hicks et al	302	358,561
Norman Mex		331,590
Panuco Crude Oil Co		308,358
Continental Mexican Pet. Co	24	307,643
Tampico Panuco Oil Co		266,608
Cia. Pet. Capuchinas	401	213,401
Schlaet et al (Mallory)	279	200,153
Tampico Panuco Maetschamppij	56	206,006
Cia. Petroleum Cosmos	283	134,597
Lavin et al		137,402
Poblano Petroleum Co		124,287
Cia. La Giralda	13	120,217
Wiegand & Foster	27	104,369
T. Moreno et al	169	94,899
Jones & Buchanan		104,731
International Dehydrating Co	177	78,199
Gilliam Bros	25	81,377
New York Maguabes		78,031
Monterrey Petroleum Co		75,126
Eureka Cuahtmoc		65,705
Mulcahy et al	79	51,785
E. W. Price et al		47,118
Taylor et al		46,650
Mexicana del Golfo		41,883
Etienne et al	100	31,499
United Dredging Co		28,405
El Fenix (Martin Head)	174	24,556
Lockyear & Durham	17	22,182
Riquezas Naturales, Cia	49	19,624
Lot 17 Co		18,480
Intermex Oil Co	10	9,236
General Contracting Co		10,088
Cia. La Territorial	33	6,314
R. & R. Drilling Co		8,003
Cia. La Financiera	42	3,148
Cia. La Republica		1,894
Cia. Peubla en Panuco		1,671
Cia. La Victoria		1,315
Cia. La Espina		677
Total		553,944,524

Jones of New Jersey Greets Field Men

CLEVELAND, April 1.—George H. Jones, chairman of the board of directors of the billion-dollar Standard Oil Co. of New Jersey, rubbed elbows with men from the field at the second annual joint conference of employes' and management representatives of the East Ohio Gas Co. in Cleveland, March 30. The next day he did the same thing at a conference of the Hope Natural Gas Co. at Pittsburgh.

Mr. Jones spoke of good fellowship in the Standard of New Jersey company of which the East Ohio and Hope companies are subsidiaries. The East Ohio employes' representatives who came from Cleveland, Akron, Youngstown, Canton, Cuyahoga, Wooster, Mohican and Dennison discussed with the management representatives problems of the companies and offered suggestions for improvements in the companies' operations as they saw them.

R. W. Gallagher, president of the East Ohio, presided at the Cleveland conference and luncheon. With Mr. Jones from New York were Christy Payne, head of the New Jersey company's gas interests; C. J. Hicks, executive assistant to the president of the Standard of New Jersey, and T. H. A. Tiedeman, assistant to Mr. Hicks.

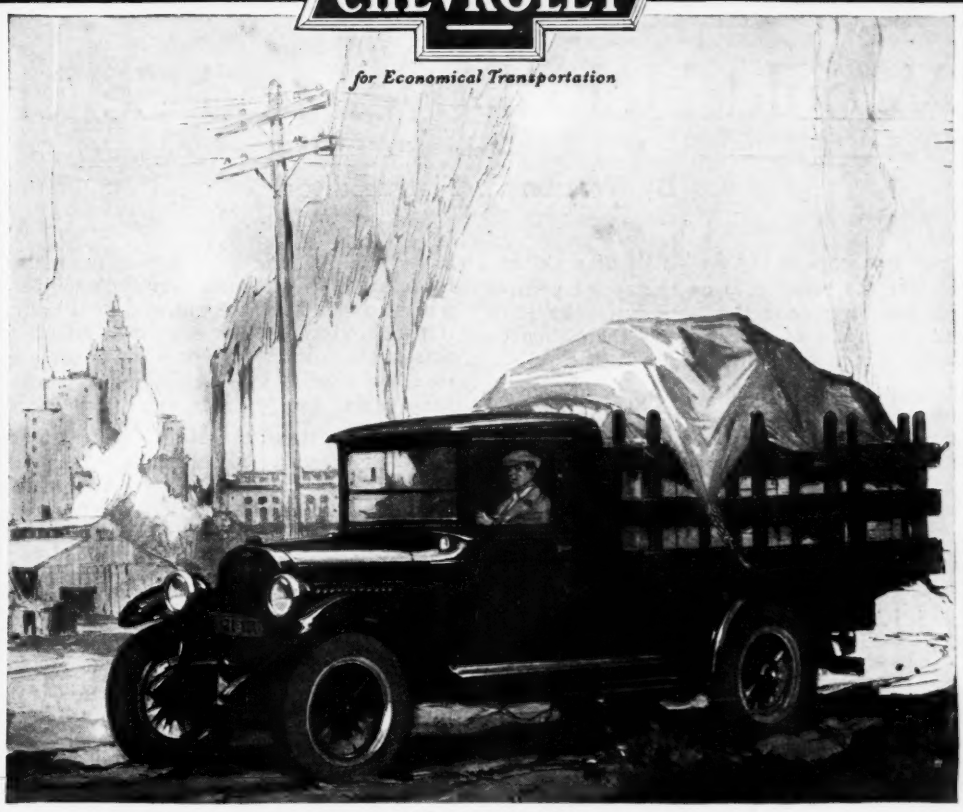
Litigation Follows Effort to Remove Lent Pumps

SHEBOYGAN, WIS., March 31.—An interesting case involving lent equipment has developed here. About two years ago, Grasse Bros. Oil Co., Sheboygan, contracted with H. Huiras to equip a station for him and supply him with gasoline and oils for 10 years. The station was sold to Biever Oil Co. recently subject to the contract, it was alleged in an injunction suit brought by the Grasse company when the Biever company sought to have another oil company install three 10-gallon pumps in place of the three 5-gallon Grasse pumps.

The Grasse company was granted a temporary injunction prohibiting removal of its equipment but upon hearing to vacate the injunction the court permitted removal of the Grasse pumps upon posting of $1,000 bond to protect the Grasse company against loss pending final outcome of the litigation.

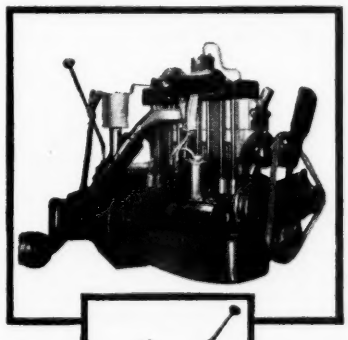
CHEVROLET

for Economical Transportation



1-Ton Truck Complete with Stake Body $680 f. o. b. Flint, Michigan

Quality Features of the world's most popular gear-shift truck!



Chevrolet is the world's most popular gear-shift truck because it offers, at amazingly low prices, scores of quality features not found on any other haulage unit in the low price field.

Included in this list are numerous recent mechanical improvements of the utmost importance, such as—AC oil filter and AC air cleaner to protect the motor from excessive wear and to maintain at its peak efficiency the smooth, effortless power for which Chevrolet's motor has long been famous all the world over. Other new features are an improved transmission and new gear-shift lever; a new and more conveniently located emergency brake; crowned fenders; a new radiator of greater cooling capacity; a new 17-inch steering wheel—and even bullet-type headlamps have been added to give a distinctive touch of smartness.

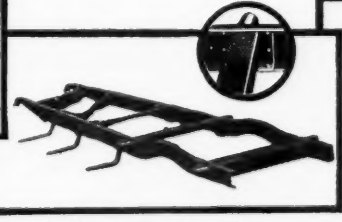
If you want the utmost in commercial transportation combined with true economy, see the nearest Chevrolet dealer.

CHEVROLET MOTOR COMPANY, DETROIT, MICH. *Division of General Motors Corporation*

1-Ton Truck with Stake Body $680. 1-Ton Truck with Panel Body $755. 1-Ton Truck Chassis Complete with Cab $610. 1-Ton Chassis $495. ½-Ton Truck Chassis $395.

All prices f. o. b. Flint, Mich. In addition to these low prices, Chevrolet's delivered prices include the lowest handling and financing charges available.

The famous Chevrolet valve-in-head motor has been made even more dependable.



A modern, 3-speed transmission provides proper gear ratios for maximum power under every condition.

A husky, 6 channel steel frame is a contributing factor to the long life and faultless performance of Chevrolet Trucks.

The rugged Chevrolet rear axle possesses abundant strength and stamina for the heaviest haulage duty—giving faultless performance under every condition.

Heavy, extra-leaved, semi-elliptic springs—set parallel to the frame—effectively cushion the load and chassis against road shocks.

World's Largest Builder of Gear-shift Trucks

Thorough Knowledge of Tank Car Market Would Help Buyer and Seller

By Warren C. Platt, Editor

WHATEVER we say, or will say, in behalf of a better tank car price for the refiners, is on the sound premise that more harm has been done the oil industry by the unsatisfactory tank car prices of recent years than almost any other single factor affecting the industry.

Such unsatisfactory prices have made, at times, unnecessarily wide margins under the tank wagon price, which have placed the oil industry in a bad light before the public, while at the same time these low tank car prices have inveigled the refiners into the bulk station business. If the oil refiners had always had a satisfactory profit in the tank car price, very few, if any of them, would ever have ventured into all the detailed anxieties of operating a station business.

One of the reasons why tank car prices have been unsatisfactory is because the industry has not studied them in the same constructive fashion it has its many other problems. True, there has been much talk about the tank car price, but not always the proper amount of analysis has been made along with the talk.

The industry was slow to appreciate the law of supply and demand works just as drastically on tank car prices as on anything else. For years the refiners have over-produced the tank car market. The industry has not appreciated that the tank car market is here to stay—at least as long as there may be buyers in that market—and that if properly handled it can be of distinct value to both buyers and sellers.

When a realization of the economic necessity and importance of a tank car market did come to the industry, then everybody thought that it was something that just took care of itself. Refiners made every effort to contract as much of their output as possible on the tank car market, thinking when they had the material contracted that their troubles were over.

National Petroleum News estimates that only 25% to 30% of the gasoline moving from Mid-Continent refineries is sold on the daily spot market (not contracted). The percentage will be higher and a great many days it will be lower.

In the rush to get output contracted on the spot market basis, or something similar, the larger refiners have been the more successful. The result has been, in a practical way, that they have really contracted their output upon a price to be made by their competitors.

Figures gathered by National Petroleum News the forepart of this year show that seven leading Oklahoma refiners sold less than 18 per cent of their output on the open spot tank car market, yet they had 62 per cent of the refining capacity of the state.

The strongest of those refiners sold the least on the spot market, even as low as 4% and 5% of their total daily sales and contracts. For illustration, one big refiner, who moved under contract some 500 cars in two weeks' time, sold only 27 cars in that time on the open spot market. Another, who moved 218 cars in the same period sold only 13 cars on that market. Still another, who had 153 cars moving, sold on the open spot market only 13 cars.

These 27, 13 and 13 groups of cars were sold on a spot market on which sales of 944 cars in Oklahoma alone had their price based. Here were three of the larger refiners who had the most vital interest in the character of that open spot market and yet who had so little to sell on that spot market that, had they decided, even the three of them, to beat that market, they didn't have enough cars available to have made a real cut, because, after their combined 53 cars had been sold that would have been the end of it. They had no more to sell.

A seller should always endeavor to sell the market up—that is, keep asking a little better price all the time, and a buyer will naturally try and buy it down—keep offering a lower price. There is no way in buying and selling to avoid the elements of a horse trade, no matter how friendly one wants to be. But nevertheless, good business not only sanctions but requires that each man do his level best to get a reasonable price. A refiner is entirely justified in trying to sell a market up. By selling a market up, we mean to keep edging the price up, even with every sale.

If the refiners of the Mid-Continent field, instead of selling only 25 per cent to 30 per cent of their output of gasoline on the open tank car market, were to decide to sell 50 per cent or 60 per cent on that market and then work with that market, they would improve it to a point that would be profitable to both refiner and buyer.

There is an art in working with a market. If you had 100,000 shares of United States Steel Corporation stock or of any other big corporation and you wanted to sell it, and a matter of several days or weeks more or less was of no great importance as to when it was sold, and you took that to the best banking house, or best brokerage house in the country and asked them to undertake the sale—here is about how they would go about it:

The brokers would study the sales of the last few days or weeks and then begin to feel out the market. Say the market for a number of days had been running around $100 a share. A broker would be instructed to sell perhaps only a hundred shares at $101. He might not put that whole 100 shares out in one offer. The first thing he would try and do though would be to get the $101 a share, regardless of how small a number of shares he had to sell. When he got that price he would try and put out more shares at that price.

If it seemed safe, he would then try and get $101.50 or $102 and he would ease out a few more shares of stock. This would be kept up until a figure which would be satisfactory to the brokers and the sellers had been reached, and at which they thought a considerable portion of that stock could be gently unloaded on the market. If the market sagged a bit under the offerings, they would slow down and try and work it up again. All of this might run for several weeks.

Anyone who wanted to buy 100,000 shares would follow substantially the same procedure, only he would try and work the market down and hold it down while he was buying.

Markets are the same the world over. They respond to the same influences. The gasoline market is no different than the market for shares of stock. Different people may buy it and it is a different product, but the economic elements of the market are the same. The refiners should always be trying to work the market up, asking a quarter or an eighth of a cent more—even a tenth of a cent more. We wouldn't be surprised but in the course of time tenths of a cent will be the fractions that will be used in gasoline sales because it will be easier for a refiner to ask a tenth of a cent more than to try and get an eighth or a quarter. Tenths also will simplify the figuring.

Up to the present time, too much effort of the refiner in the tank car market has been to get orders for volume, rather than price. While it has been necessary to get the volume, we admit, nevertheless, the fact remains that volume without a satisfactory price is worse than no volume at all. Prices have been made with a view of how many orders could be had rather than to see whether or not it was humanly possible to get a tenth, or two-tenths, or four-tenths of a cent higher price.

A study of the economic factors of a market and an intelligent use of those factors should materially improve the tank car market, not only in the West, but everywhere.

THE JOBBER'S NIGHTMARE

Letters To The Editor

National Petroleum News

WHEN we published a method sent in by Dr. Alfred Oberle of Kansas City for rapid conversion of Fahrenheit temperatures to Centigrade and vice versa, it seems that we started something. Dr. Oberle's method was published on page 104 of the Jan 26. issue of National Petroleum News.

Publication of this system moved Ira William Schwartz of Plainfield, N. J., to send in the conversion method he uses. This was published on page 80 of the March 16 issue of National Petroleum News. Now we get a reply to Mr. Schwartz from Dr. Oberle, containing still another method and we also get a fourth method from B. L. Heath, chemical engineer of the Ashland Refining Co., Ashland, Ky.

Dr. Oberle says the Schwartz formula brings back to his mind the time "when one was not only bothered with conversion of Fahrenheit of Centigrade but also Reaumur degrees."

In order to facilitate conversion of any one of the three temperature scales to any other temperature scale, Dr. Oberle says the following formula was generally given:

(1) n degrees R (Reaumur) = 5/4 n degrees C = 9/4 n degrees + 32 F

(2) n degrees C = 4/5 n degrees R = 9.5 n degrees + 32 F

(3) n degrees F = 4/9 (n-32) degrees R = 9/9 (n-32) degres C

Formulas (2) and (3), says Dr. Oberle, are those of Mr. Schwartz's method (9/5 = 1.8) P.T.

* * *

Mr. Heath's letter says:

"I have followed in detail the two methods for temperature conversion from Fahrenheit to Centigrade as published in your magazine. The method submitted by Mr. Schwartz is a considerable improvement over Dr. Oberle's method as published in your magazine a few weks ago.

"I believe that the method I have used for sometime is some improvement over either of the above methods.

"Briefly the method is as follows: Add 40 to the temperature reading to be converted, multiply by five ninths or nine fifths as the case may be and subtract 40.

"I. e. convert 302 degrees F. to C.
302 plus 40 equals 342.
5/9 of 342 equals 190.
190 minus 40 equals 150 degrees C which is the answer."

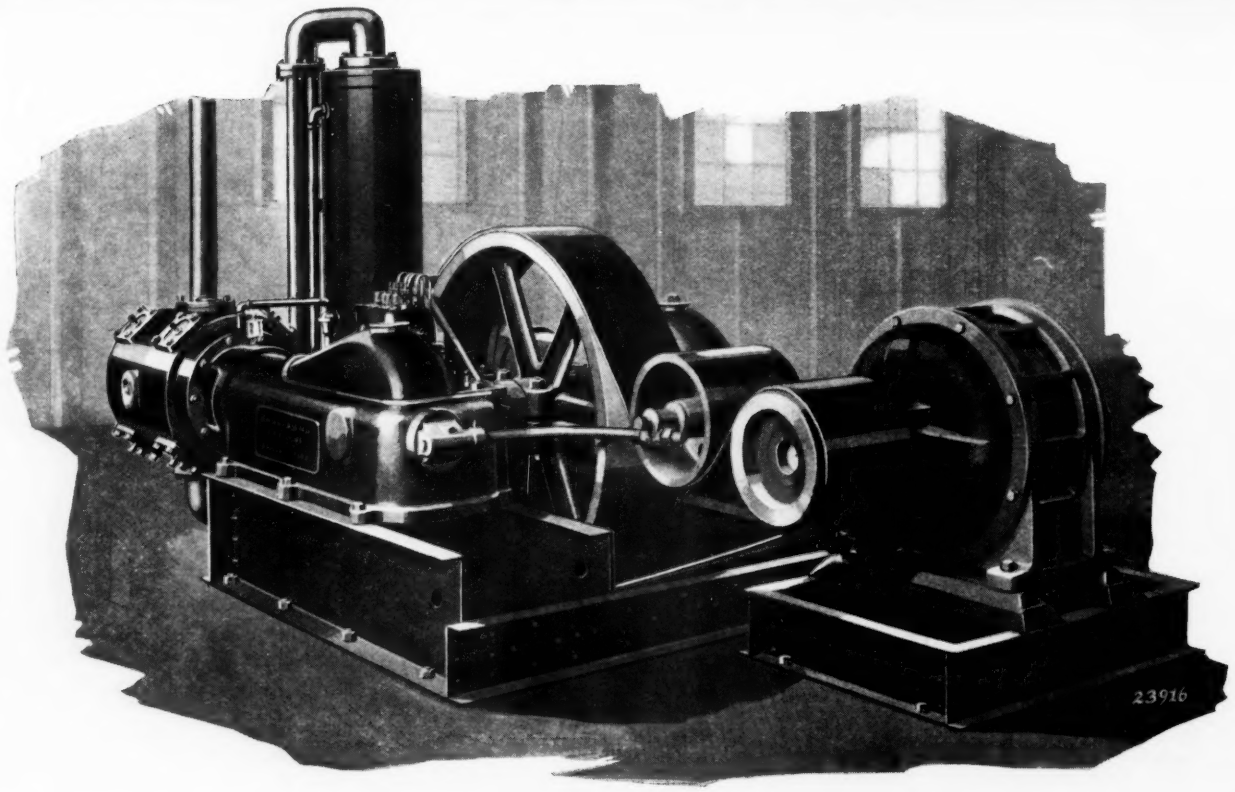
"Convert 160 degrees C. to F.
160 plus 40 equals 200
9/5 of 200 equals 360
360 minus 40 equals 320 degrees F. which is the answer."

We have received the following letter from V. E. Monnett, head of the department of geology and geography of the University of Oklahoma, Norman, Okla.:

In your issue of March 2 there appeared an article under the date line of Tulsa, Feb. 25, entitled "A. P. I. Research Projects Are Going Forward." I desire to correct a statement which occurred in the fifth paragraph of this article to the effect that Mr. Copeland was doing the work on the project Convergence of Strata in Anticlines. This particular project is being carried on by H. A. Ireland, a graduate student of Oklahoma.

Richard G. Copeland is engaged in research work of another character, concerned with the Origin of the Faulted Structures of Lincoln County, Oklahoma, and Their Relation to Petroleum Production. This work is being carried on under a fellowship established by C. J. Wrightsman, oil producer of Tulsa, and will not be completed until sometime during the summer months.

In addition to the above two men, 10 other graduate students are engaged upon various types of research work, principally in connection with the problems of petroleum geology in Oklahoma.



New Records from this New Compressor

THE production records of a comparatively new but well-known Oklahoma field show approximately two-thirds of the enormous supply coming from one-third of the wells. And those wells showing the high production are the ones equipped with gas lift.

On the face of such a report one can see only the enormous possibilities in the installation of this method of pumping. But the economy of such a system may still be low. Economy depends on the Compressors.

Ingersoll-Rand Company has developed the Type XOB Compressor for this application. The Company's engineers have been in the field and have been studying the demands made on these machines for several years. They have developed a unit with one purpose in view—to fit the oil producer's job.

The Type XOB Compressor is a two-stage machine of duplex construction. This construction gives a flexibility to the compressors which can be obtained with no other design.

Different sizes of cylinders are available for this unit, so that it can easily meet any pressure conditions it is liable to encounter. These are all stocked in local warehouses throughout the fields; hence immediate delivery is always possible.

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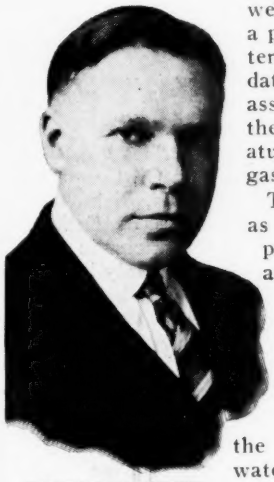
The Gas Lift--Latest Details in Practice And Economic Aspects

By Lester C. Uren

Professor of Petroleum Engineering, University of California, Berkeley, Calif.

THE previous article of this series was devoted to an analysis of the principles of the gas-lift as applied in oil recovery. With this review of the theoretical aspects of the subject in mind, we are now in a position to interpret the field data that have assembled, in the recent literature of the gas-lift.



LESTER C. UREN

The gas-lift, as applied in oil production, is a development of the air-lift which originally found application in the pumping of water from wells and mines. In 1899 the first recorded successful use of the air-lift in pumping oil, was made by Mr. R. Stirling in the Russian oil fields.[1] Later, it found application in the oil-fields of Louisiana[2] and California[3]. These early uses of the method indicated a rather limited field of application, the concensus of opinion among oil producers being that it could be considered as a competitor of the oil-well plunger pump only when unusually large volumes of fluid were to be handled, or where incursion of large quantities of unconsolidated sand into the wells with the oil made mechanical pumping impractical.

EARLIER experience with the air-lift in the pumping of water, indicated the necessity for a higher fluid level than was ordinarily available in oil wells during the pumping stage. The use of the method during the earlier period of natural flow, or as a means of prolonging the natural flow period, had apparently not occurred to oil producers. As early as 1911, however, tests were made in the California fields which involved returning high-pressure gas to the space between the casing and tubing of wells, as a means of stimulating flow.

In 1914, Mr. Phillip Jones patented the combined process of officially flowing wells with gas, extracting gasoline vapor from the gas, compressing and recycling the dry gas back into the wells. The possibilities of the proposed method did not attract much attention until about 1923, when the problems presented in pumping the deep wells of the Los Angeles Basin, in California, began to receive the serious consideration of oil producers. Under the conditions imposed in lifting oil from wells 4000 feet or more in depth, the efficiency of the oil-well plunger pump is low and capacity small. Wells reaching the end of the period of natural flow with well sustained productions of many hundreds or even thousands of barrels per day, when "put on the beam," immediately dropped to productions of but a small fraction of their earlier rates.

Inability of the available mechanical pumping devices to keep pace with the potential productive capacities of these deep wells, thus led producers to consideration of methods of prolonging the flow period, or of stimulating flow by artificial means. In this way, the gas-lift, a method of pumping fluids that had been used many years previously and practically abandoned by oil producers, was again revived and under the new conditions imposed, found to be superior. Its success, however, was in no small degree due to the comparatively recent and rapid development of the natural-gasoline industry and to the consequent demand for wet gas which would provide a basis for continuation and further expansion of this industry. At about this time too, operators began to appreciate the significance of the gas-oil ratio, and the more advanced producers recognized in the gas-lift, a method of recovery that might be applied as a means of conserving gas in the productive sands and thus increasing ultimate recoveries.

PROMPTED by the success of the gas-lift in the oil fields of southern California, operators in the Mid-Continent interested themselves in its application to their peculiar problems, and the more recent advances in the art of gas-lifting have been largely due to the activities of the more progressive oil companies there. It is probably also a fair statement that present day gas-lift practice is essentially a contribution to the oil industry from the petroleum engineering profession, for the development of the method seems to have been coincident with the more intensive application of engineering talent to the

Writing Production News While it Turns from Ideas, Through Experiments, Into Practice

DEVELOPMENTS in oil production methods come fast today. New ideas are launched, first as theories, perhaps in Oklahoma. They may be tried out in Texas and become experiments. Then, revised in California, they become accepted practice in oil fields, almost over night.

Waiting to write of such developments until they become general practice would fail to keep practical operators in touch with what is going on in their business. With the rapid changes in the oil producing industry, coming from many sides, this kind of news must be written while it is in the making, while the wheels are actually turning.

That is exactly why the special articles on improved production practice written exclusively for National Petroleum News by Lester C. Uren, head of the petroleum engineering department of the University of California, are attracting so much attention. He is telling of changes, innovations, new ideas on producing methods while they are developing, in this new exclusive series which will continue throughout the year.

That is National Petroleum News policy in handling production news. That explains why it has carried so many more articles on the gas-lift than any other oil paper, written by its own editorial men, as well as outside authorities. The accompanying article is the second written by Uren on the gas-lift, giving in detail history of its development, mechanical features and economic issues its use is bringing to the industry. Later articles will take up other important changes in production methods.

[1]Stirling, R., "Pumping by Compressed Air in the Baku Fields", Journal of the Institution of Petroleum Technologists (London), Vol. 6, p. 379-406, (1920).
[2]Ivens, E. M., "Oil-well Compressed Air Pumping Systems", Transactions, American Society of Mechanical Engineers, Vol. 31, part 1, p. 341-359, (1909).
[3]Rix, E. A., "Air-Lift Pumping of Fluids", Oil Industry, Vol. 3, p. 4-11, June 15, 1910.

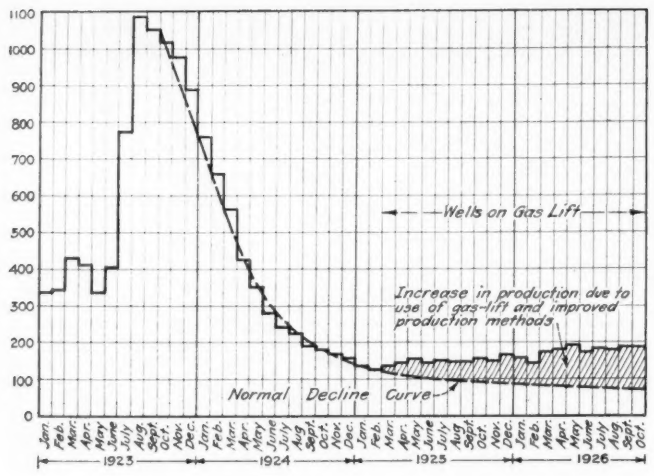


Fig 1—Production graph for a group of 38 wells in the Santa Fe Springs Field, Cal., showing increase in rate of production due to placing 18 wells of the group on the gas-lift. (After F. F. Hill)

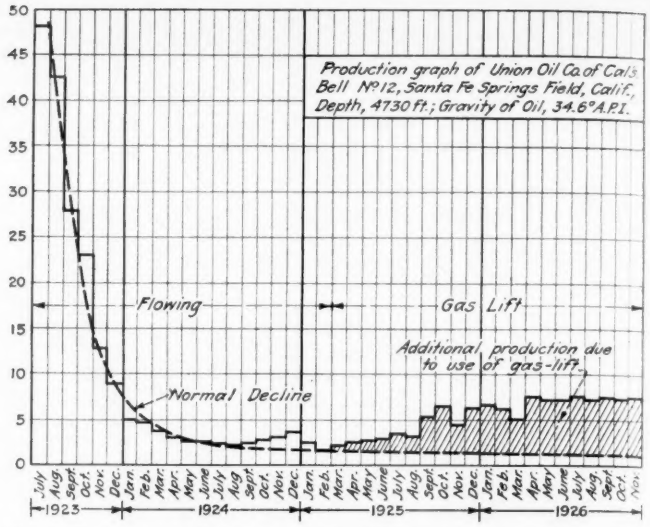

Production graph of Union Oil Co. of Cal's Bell No. 12, Santa Fe Springs Field, Calif., Depth, 4730 ft.; Gravity of Oil, 34.6° A.P.I.
Flowing
Gas Lift
Additional production due to use of gas-lift
Normal Decline
1923
1924
1925
1926

Fig. 2—Production graph of a well, showing increase in rate of recovery on changing from free-flow to gas-lift. (After F. F. Hill)

problems of oil recovery and it has been highly developed only on properties owned by companies having strong engineering organizations.

Results of Gas-Lift Practice in the California Fields

MR. F. O'NEILL,[4] in reviewing recent improvements in production practice in the California fields, notes that, in many instances where the gas-lift has been introduced during the later stages of natural flow in the Dominguez, Santa Fe Springs and Signal Hill fields, the rate of production has increased 100 per cent. The Baume gravity of the oil is often reduced from 0.5 to 1°, but this decrease is offset by the increased recovery of gasoline from the gas. Early efforts to apply the gas-lift in the older San Joaquin Valley fields of California, have been unsuccessful, possibly because the prevailing rock pressures have declined beyond the point where effective operation is possible.

Mr. T. E. Swigart[5] believes that the gas-lift is particularly well adapted to conditions in the Southern California fields where wells are from 4000 to 5000 feet deep with productive formation thicknesses of from 400 to as much as 2500 feet. The wells have high fluid levels as a result of high rock pressures. Wells from two to three years old are capable by this method, of producing from 300 to 800 barrels per day. Mr. Swigart suggests that we should not expect to find the gas-lift successful in the older fields where the rate of production is low, and believes that 300 barrels per day may be a possible lower economic limit below which gas-lift operations would become less advantageous than other methods of recovery.

Mr. F. W. Lake[6] describes gas-lift installations of the Union Oil Co. of California, in the Brea-Olinda, Richfield and Huntington Beach fields of California and notes several instances in which productions have been notably increased in comparison with recoveries by plunger pumping. The advantages of centralized control of wells, leading to economies in labor and power and well maintenance, are particularly emphasized. Increased gasoline recovery from the gas circulated has been an important source of additional revenue.

IN a recent paper by Mr. F. F. Hill,[7] the experience of the Union Oil Co. of California in application of the gas-lift, is reviewed. In December, 1926, this company had 100 wells producing by this method. Some of these are more than 5000 feet deep, and in some instances are operating where plunger pumping could not be carried on suc-

[4]O'Neill, F. E., "Improved Production Methods in the California Fields", Transactions, American Institute of Mining & Metallurgical Engineers, See "Petroleum Development and Technology in 1925", pages 77-92.

[5]Swigart, T. E., Discussion of paper listed under (4), above; i. b. i. d., p. 96-7.

[6]Lake, F. W., "Gas Lift in the Orange District," Union Oil (of California) Bulletin, November, 1926, page 9.

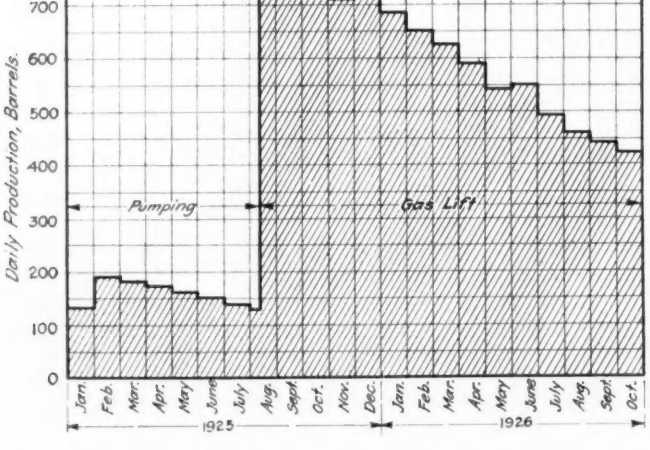


Fig. 3—Production graph of a well converted from a pumping to a gas-lift well 40 months after completion, showing increased rate of recovery due to introduction of gas-lift. (After F. F. Hill)

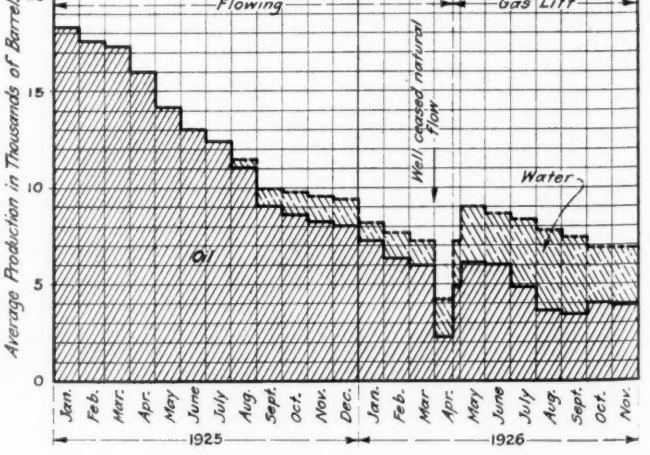


Fig. 4—Production graph of a well that ceased natural flow and was restored with the gas-lift. Water production alone is greater than could be handled with the plunger pump. (After F. F. Hill)

cessfully. In some cases large quantities of water flowing into the wells with the oil increase the volume of fluid beyond the capacity of a deep-well plunger pump; but the superior capacity of the gas-lift makes it possible to handle all fluid that the productive sand is capable of yielding. Substantial savings in operating cost have resulted in many instances through application of the gas-lift. Figures 1 to 4 inclusive, are redrawn from graphs given by Mr. Hill as representative of results secured by the gas-lift on Union Oil properties.

MR. C. R. McCOLLOM,[8] in discussing the experience of the Union Oil Co. of California in its gas-lift practice, reports that production records extending over a year's time show a recovery of 124 per cent more oil than normal decline curves indicate would be recovered by ordinary methods of flowing and pumping. The gas oil ratio was also reduced 33 per cent (from 1834 to 1209 cubic feet per barrel), and the production of natural gasoline was increased 183 per cent. Union Oil engineers are of the opinion that at least 50 per cent of the increased production represents an increase in ultimate yield. Computing percentage recoveries on the basis of gas solubility factors and indicated gas-oil ratios, it is shown that about 23 per cent of the total oil content of the sands is recoverable by pumping methods and 33 per cent by the use of the gas-lift, or a net gain of 10 per cent in percentage ultimate recovery.

Conservation of gas pressure in the productive sands is therefore an important advantage in comparing the gas-lift with other methods of recovery. In some instances, due to faulty mechanical conditions, wells that could not be pumped have been successfully operated by the gas-lift method. In a study of the gravity of the oil produced from 18 wells, before and after introduction of the gas-lift, it was found that in nine cases the gravity of the oil was decreased and that in the remaining nine cases, the gravity was increased. The average for all 18 wells showed an increase in A. P. I. gravity of 0.23° after introduction of the gas-lift. In one instance there was a decrease of 1.3° in gravity. The lighter fractions taken from the oil, however, were entirely recovered in the gasoline recovery plant, as indicated by a reduction of 4° in the gravity of the gasoline condensed from the gas.

Mr. R. P. McLaughlin[9] gives data derived chiefly from California gas-lift practice. He states that the cost of lifting oil by compressed gas varies from 3 to 15 cents per barrel of oil, depending upon lift efficiency. The cost of compressing gas to 300 or 400-pounds pressure is said to vary from 3 to 5 cents per thousand cubic feet of free

[7]Hill, F. F., "Lifting Oil with Gas," Bulletin, American Petroleum Institute, Vol. VIII, No. 6, pages 67-73, (1927).
[8]McCollom, C. R., Bulletin, American Petroleum Institute, Vol. VIII, No. 6, (1927) pages 325-326.

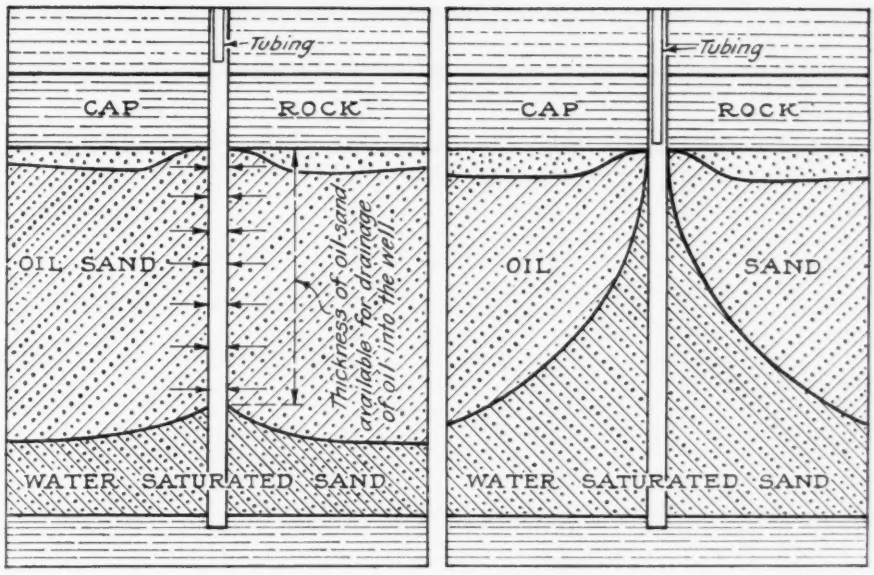


Fig. 5—Sketches illustrating effect of back-pressure on bottom-water incursion. At left, under the influence of high back-pressure, water is held in check. At right, with lower back-pressure, water "comes up" about the well and cuts off oil production. (After Bennett and Sclater)

gas. Some of the more efficient gas-lift installations are using only 400 cubic feet of gas per barrel of oil. Mr. McLaughlin believes, and offers data supporting the claim that scientifically designed foot-pieces on the eduction tubes increase lift efficiency. Computations are offered indicating the velocity of flow of fluids through gas-lift eduction tubes. If 5500 cubic feet of gas is used to lift a barrel of oil 4000 feet through 2½-inch tubing, and 400 barrels of oil is being lifted daily, the velocity at the bottom of the tubing is about 210 feet per minute (a leisurely walking speed), while at the top, due to gas expansion, the flow velocity is about 4120 feet per minute, or about 50 miles per hour. At the bottom the oil occupies 20 per cent of the total volume of the tubing, while at the top it occupies only 1 per cent. Mr. McLaughlin gives complete operating data for eight different gas-lift installations.

Results of Gas-Lift Practice in the Mid-Continent Fields

MR. S. F. SHAW[10] has given the results of gas-lift installations in the Garber and Tonkawa fields of Oklahoma. By careful attention to details of design, particularly in eliminating all sources of back-pressure and in adopting proper sizes of eduction tubes, production from 14 wells was increased from 6590 barrels to 13,847 barrels. Some of these wells were already being operated by gas-lift of ordinary design. Mr. Shaw emphasizes the necessity for removing all pockets in the flow tubing in which gas or air may accumulate, as well as all horizontal pipes in flow connections at the surface.

Gas traps should be placed near the well and at such an elevation that oil may flow by gravity to the gauge tanks. Special attention should be given to the design of the lower section of the eduction tube in order to avoid slippage losses, and to the upper end in reducing the friction losses to a minimum. The rate of production should be so controlled as to realize maximum efficiency. Mr. Shaw computes the volume of gas necessary to lift a barrel of oil and compares this figure with the gas volume theoretically necessary according to the physical laws governing isothermal gas expansion, and finds that the efficiencies obtained range from 12.8 to 21.4 per cent in the case of the wells above referred to. Similar computations for gas-lift wells in the Dominguez Field of California show efficiencies of only 6 or 8 per cent according to Mr. Shaw's method of computation.

BENNET and Sclater,[11] in a recent paper descriptive chiefly of gas-lift methods in the Panhandle Field of Texas, also give many valuable suggestions of general application. Emphasis is placed on the desirability of adequate gas-pressure and volume control, and upon the use of recording meters and pressure gauges, both on the gas admission lines and discharge lines from each well, as a means of studying lift efficiency. Flow pressures necessary are found to range from 4 to 10 pounds per 100 feet of flow line. It is regarded as preferable to flow wells through tubing rather than between tubing and casing, there being less contact surface and less turbulence, with consequently lower energy loss, in the former case. This is especially true when corrosive ground waters must be lifted with the oil. Corroded tubing can be more readily replaced and at smaller cost than the well casings.

The Panhandle oil congeals at 60°F., forming large quantities of paraffin

[9]McLaughlin, R. P., "Notes on the Gas-Lift Process," Transactions, American Institute of Mining Engineers, December, 1926, Pamphlet No. 1619-G.

[10]Shaw, S. F., "Roxana finds Air-Lift Successful in Mid-Continent," Oil Weekly, Oct. 22, 1926, p. 40-43.
[11]Bennett, E. O. and Sclater, K. C., "Some New Aspects of the Gas Lift," Transactions, American Institute of Mining & Metallurgical Engineers, New York Meeting, February, 1927.

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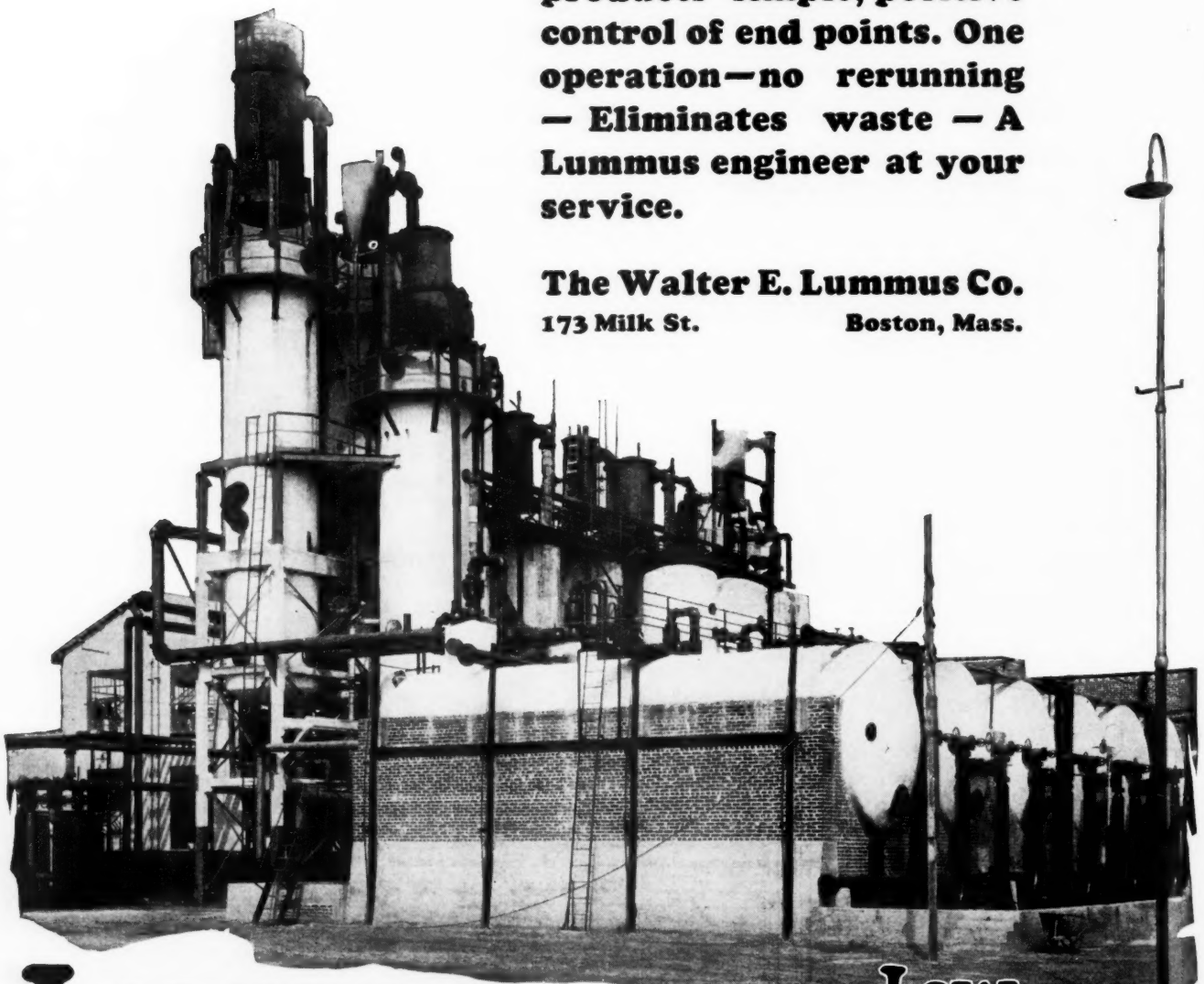

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wax, and the tendency of the wax to accumulate is one of the most difficult problems to contend with in this field. Due to wax accumulation, plunger pumping has been found so troublesome that it does not pay to operate small producers and operators have turned to the gas-lift as the only possible method of recovery except swabbing. In gas-lift practice, the flow lines will become plugged with wax within 48 hours unless preventive measures are adopted. Preheating the gas is partially effective, but a mechanical scraper run daily through the tubing in each well, is found to be most successful in combating paraffin accumulation.

Wells producing as little as five barrels per day are being profitably operated by gas-lift methods, though the oil produced is almost a "fog" and most of the values are recovered in the gasoline extraction plants. Gas containing but a trace of vapor when injected into a well returns to the surface carrying as much as 1.6 gallons of condensable gasoline per 1000 cubic feet.

IN the Panhandle field, water occurs beneath the oil in the productive formation, and causes considerable difficulty in "coning up" about the wells and shutting off oil production if the fluid is produced too rapidly. (See Figure 5). The gas-lift offers a convenient means of controlling this, for by adopting conditions such that a suitable back-pressure is maintained on the reservoir rock, the water cones are depressed and the rate of fluid production regulated so that a maximum production of oil is secured. Slight readjustments in pressure conditions will often bring about marked changes in the volume of water produced with the oil. In one case, a well operated by swabbing, was producing 680 barrels of oil and the total fluid contained 66 per cent of water. When subsequently operated by gas-lift, the same well produced 1700 barrels per day of oil and the total fluid lifted carried only 25 per cent of water. It was estimated that a back-pressure of 310 pounds per square inch was necessary to accomplish this.

In the Seminole Field of Oklahoma,[12] upwards of 40 per cent of the wells are operated by gas-lift and the remainder are being rapidly converted to this method of recovery. The oil is here produced under comparatively low formational gas pressure and the gas-oil ratios are lower than normal, averaging only about 400 cubic feet per barrel. Lifts are operated with gas pressures averaging about 225 pounds, while an average of 700,000 cubic feet of gas are circulated through each well daily. The average oil production for the gas-lift wells in February, 1927, was about 1775 barrels per day. In some instances in this field, the gas-lift has been applied before natural flow ceased, with notable increases in recovery. It is believed, due to the unusually favorable conditions for gas-lift operation in this field, that this method of recovery may be continued until production falls to low levels.

[12]Hinton, A. F., "Seminole is Greatest Experiment in Stimulated Production," National Petroleum News, Feb. 23, 1927, p. 32.

Special Forms of Gas-Lifts

A NUMBER of patented flow devices and gas-lift "systems" are being exploited, which their proponents claim give superior efficiencies in air and gas-lift operation.

Mr. B. C. Dumm[13] gives results secured with the Loomis system of gas-lifting in the Torrance and Cat Canyon fields of California. In this system, a special foot-piece is provided on the eduction tube and air pressure is applied intermittently to the space between the tubing and the casing. Pressure is applied only until flow occurs and the gas supply is then cut off. Displacement of the oil is probably in the nature of an ejector or "impulse" effect, rather than to aeration of the fluid. On one property in the Torrance Field, six wells in a group are operated by this system, and by means of an automatic device, gas is supplied to each well in turn for a period of three months. Each well of the group thus receives the full volume of gas from three compressors about every 18 minutes. A flow occurs from each well with every gas-pressure application.

When the system was installed, the six wells were producing about 600 barrels of 19° oil daily, but immediately increased to 900 barrels, and after two years of gas-lift operation, the wells still yield 500 barrels daily. In the Cat Canyon Field, one well producing 75 barrels of a very viscous oil had its daily production increased to 450 barrels and the gravity of the oil was increased 3° in A. P. I. gravity. Productions of other wells in this field have been doubled through the application of the Loomis System, but the success attained with this very viscous oil is in part due to the practice of heating the gas circulated through the wells.

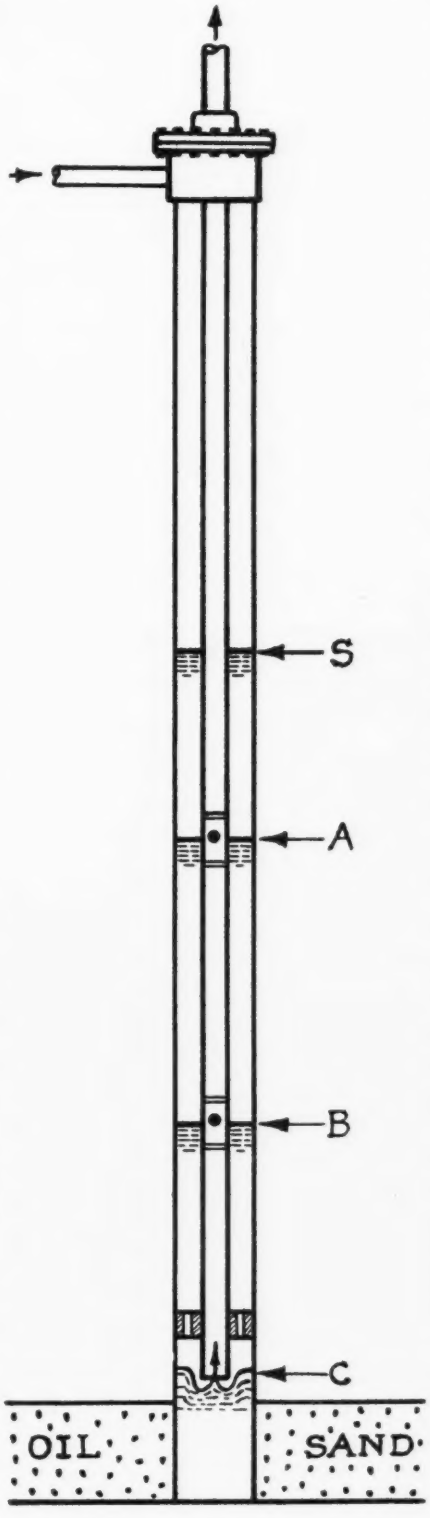

Fig. 6—Illustrating multi-stage facilities for starting gas-lift

MR. A. F. HINTON[14] describes the Kellogg-Williams Flow Device, which also accomplishes displacement of the oil by an ejector effect rather than by ordinary aeration. The device is placed between two joints of tubing, oil being admitted to the tubing from below, while gas under high pressure is admitted through small openings in the side. When the gas apertures are smaller than a certain critical size and the gas-oil ratio ranges between certain limits, a flow of alternating "pistons" of gas and oil results, which the exploiters of the device claim is more efficient from an energy stand-point than ordinary aeration. It is best adapted to wells having a gas pressure of 200 pounds per square inch or more. A number of instances of successful results with this device, extending over a period of ten months, are given by Mr. Hinton.

Efforts toward the development of multi-stage gas-lifts have met with some success. The objective in the multi-stage lift is to simultaneously inject compressed air or gas at several different elevations into the eduction tube, or in alternating cycles into different portions of the tubing, in order to permit of more complete and uniform aeration than is possible when all of the gas is injected at one point, or to accomplish stage ejection with lower

[13]Dumm, B. C., "Air-Gas Lift Methods of Flowing Wells have Proven Successful in California," Oil Weekly, March 11, 1927, p. 44.

[14]Hinton, A. F., "Well's Natural Pressure Put to Work in New Flowing Device," National Petroleum News, February 23, 1927, p. 53.

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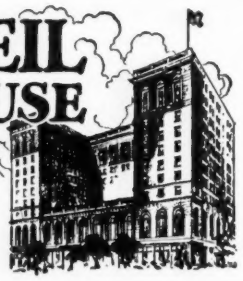

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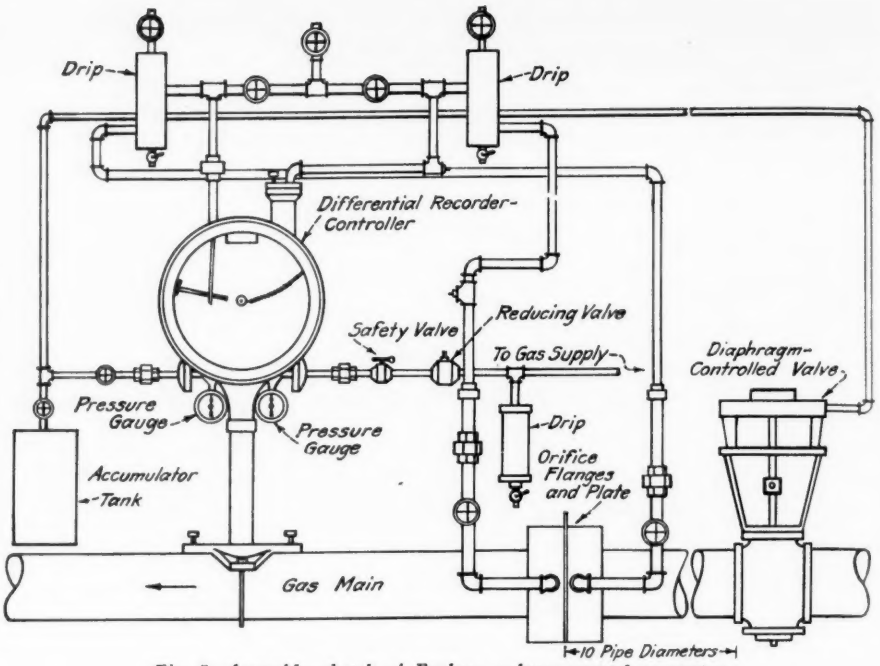

Fig. 7—Assembly sketch of Foxboro volume control apparatus

than normal operating pressures. Lower starting pressures are also possible by this means.

Details of Gas-Lift Practice

Though prevailing gas-lift practice varies somewhat due to variation in conditions in different fields and due to varying degrees of engineering efficiency in different engineering organizations, the following particulars have been assembled as representative of what the writer believes to be the best current practice in operation of wells by this means.

Operating Gas Pressures

Operating gas pressures are extremely variable, ranging from 20 to as much as 500 pounds per square inch, or more in extreme cases, depending upon operating conditions. Operating pressures of from 125 to 300 pounds per square inch are common. The important considerations in determining the pressure necessary are the depth of the well, the size of the eduction tube, the density, viscosity and surface tension of the fluid, and the volume of gas per unit volume of fluid raised. The working pressure should be adjusted until the flow is uniform, without tendency to "head" or surge.

Gas Volume

IT is seldom in the operation of the gas-lift, that the ratio of gas to oil is less than 400 cubic feet per barrel, and the gas factor commonly ranges from 500 to 2000 cubic feet. Occasionally, under unfavorable conditions, as much as 5000 cubic feet of gas, or even more in some instances, must be circulated for each barrel of oil lifted to the surface. The volume of gas required per unit of time, will depend chiefly upon the rate at which fluid is being raised, which in turn, is dependent upon the productive capacity of the well, upon the size of the eduction tube and the position of its lower end with respect to the oil zone. The extent of aeration of the fluid may be varied within wide limits, and the volume of gas necessary will vary accordingly. Within certain limits, the pressure necessary will be regulated by the volume of gas circulated, lower operating pressures being secured with higher gas volumes, and vice versa.

Starting Pressures

STARTING pressures in gas-lift wells are considerably higher than normal operating pressures, the former being frequently as high as double the latter. Starting pressures as great as 1500 pounds per square inch have been found necessary in some instances. The increased starting pressures are due to the accumulation of unaerated fluid in the well which, due to its greater density, offers greater resistance to displacement than does the fully aerated fluid handled in normal operation of the gas-lift.

Operators have in some instances made use of aeration systems in which compressed gas may be admitted to the eduction tube at several different depths. In Figure 6, for example, in starting after a period of idleness during which fluid has accumulated in the well to the static level, S, compressed gas is first admitted to the eduction tube at point A, thus aerating the fluid in the tube above this point. By suitable means provided in the design of the lift (such as turning the tubing), opening A is then closed and the fluid outside of the tubing depressed to point B, at which gas may again enter the eduction tube, aerating the fluid above. Opening B is then closed and the pressure raised until the gas enters the lower end of the tubing at C, after which the fluid in the eduction tube contains sufficient gas to cause it to overflow at the surface. By this means, the maximum starting pressure is materially lower than that which would

be necessary if the fluid were at once depressed to point C.

Bennett and Sclater[11] describe a method of starting gas-lift wells which permits of the use of materially lower starting pressures and yet does not require any complex stage-aerating contrivances. Provision is made for forcing gas down through the eduction tube as well as down through the space between the tubing and the casing. In starting after a period of idleness, gas is first forced down through the tubing until it escapes into the annular space between the casing and the tubing, thus aerating the fluid in the well above this point.

Sudden reversal of the flow of gas from the tubing to the space between the casing and tubing then causes the aerated fluid to enter the tubing and rise to the surface. Due to the generally greater cross-sectional area of the space between casing and tubing in comparison with the cross-sectional area of the tubing, oil does not rise to such a great height outside of the tubing when gas is forced down through the tubing as it rises in the tubing when gas is forced down into the casing. Consequently, lower starting pressures are necessary in the former case.

In some cases, when fluid levels are high and deep tubing depths are desirable, provision is made for aerating the fluid in the well through the tubing as the latter is lowered.[11] Thus, when the lower end of the tubing reaches its working position in the well, the fluid in the annular space about the tubing is well aerated and sudden application of gas pressure to the annular space at the casing head, will cause the aerated fluid to rapidly rise to the surface through the tubing. By first aerating the fluid in the well through the tubing, wells in the Panhandle Field have been started on a maximum pressure of 250 pounds, while 600 pounds is often required to start the same wells flowing through tubing without preliminary aeration.

Pressure and Volume Recording Devices

In order that a proper record of the factors influencing lift efficiency may be continually preserved, it is important that recording pressure gauges and gas meters be provided on both the gas inlet and discharge tubing of each well. An orifice meter with recording gauge giving a continuous record of both the static and differential pressures, serves both purposes. Subtraction of the gas volumes passing the two meters provides a satisfactory means of computing the formational gas factor, providing there is no leakage of gas to exposed low-pressure sands penetrated by the well.

Gas Pressure and Volume Control

Since lift efficiency depends to an important degree upon maintenance of a proper gas pressure and volume, it is essential that means be taken to keep these factors reasonably constant. This may be done by frequent valve adjustments and close personal inspection and

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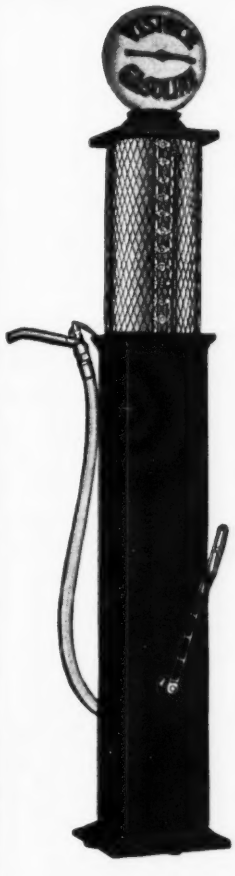

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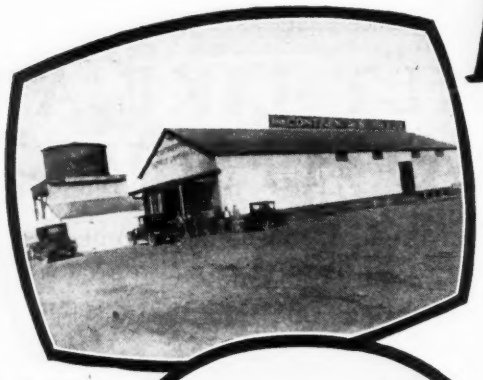

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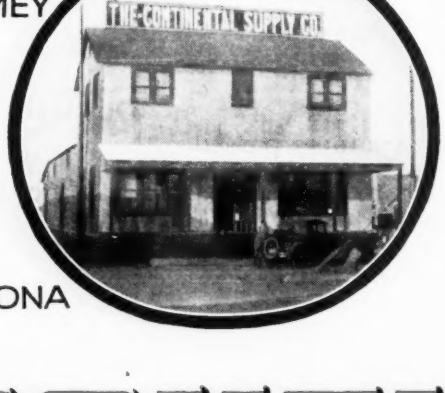

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supervision, or it may be accomplished through the provision of mechanical pressure and volume control devices. The latter are more reliable and effective. Pressure regulators of the floating diaphragm type provide sufficiently accurate control for most purposes and are widely used.

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Another convenient means of gas volume regulation is described by Bennett and Pierce.[15] Gas from a high-pressure transmission and storage main is permitted to flow into a lateral through an orifice diaphragm so proportioned that the pressure in the lateral will be less than half that of the pressure in the main. The volume of gas flowing through the orifice will then bear a constant relation to the pressure in the main, and if the latter is kept uniform by a suitable pressure regulator, the volume of flow will remain reasonably constant. If the pressure conditions and sizes of the transmission lines are predetermined, it is possible to compute the size of the orifice to employ in order to maintain any desired volume of flow.

Gas Preheaters

GREATER efficiency is secured in gas expansion if it is preheated immediately before it enters the well. Hot gas is also useful in offsetting the tendency of paraffin wax to separate from the oil as a result of the chilling effect due to gas expansion, and as a means of reducing the viscosity of very heavy oils. The use of gas preheaters in the Panhandle Field of Texas and in the Cat Canyon Field of California for such purposes, has already been mentioned. The preheaters employed in this service may take the form of heat exchangers, using steam as the heating medium, or direct-fired tubular appliances or fire-tube boilers, using natural gas as fuel. Preheating the gas at the casing head to several hundred degrees Fahrenheit, is feasible by the latter method.

Size of the Eduction Tube

The size of the eduction tubing in gas-lift wells will vary with the rate at which the fluid is to be raised, the diameter of the well casings, the characteristics of the fluid and other related factors. Tubing is seldom less than two inches in diameter, and in extreme cases may range up to 4½ inches. The smaller sizes of tubing, ranging from 2 to 3½ inches are commonly employed. Theory dictates the use of a tapered eduction tube, increasing in diameter from the bottom to the top, but this is not practically feasible. In some instances, efforts have been made to approximate this condition by assembling the eduction tube of varying diameters of tubing connected by bell or long-tapered nipples. It is thought, however, that this practice promotes sudden changes in pressure conditions within the eduction tube, which may lead to loss of efficiency.

Depth of the Lower End of the Eduction Tube

THE depth to which a gas-lift well should be tubed will depend upon the amount of back-pressure which it is desired to maintain on the productive formation. This in turn, will be determined by sand conditions, by the tendency of the well to produce water along with the oil, and by the degree of control of the formational gas factor afforded by variation in back-pressure. Practice in this regard is extremely variable, in some cases wells being tubed almost to bottom, while in others, the lower end of the tubing will be suspended many hundred feet above the oil sand. To avoid undue gas drainage and permit oil flow through the full depth of the productive formation, it would appear to be desirable to keep the lower end of the eduction tube above the top of the oil sand.

Theoretical considerations would lead one to expect that lowering the tubing and thus maintaining a lower operating fluid level in the well, would decrease the back-pressure on the sand, and this is probably true in many instances. However, if the fluid below the lower end of the eduction tube contains a great deal of gas, so that its density is low, and, if the eduction tube is of small diameter, so that it offers a high resistance to the flow of fluids, it may be true that lowering the tubing will increase the back-pressure on the productive formation. For the maximum rate of recovery, we should place the lower end of the tubing at that depth at which the total back-pressure will be a minimum. This can be determined approximately by trial, but could be expedited by the use of a pressure indicating device placed in the well at the level of the oil sand. The writer has previously described a type of fluid level indicator which he believes could be readily adapted to this purpose.[16]

It may happen, due to the tendency of sand or water to flow into the well with the oil, that the most desirable back-pressure from the stand-point of oil production, will be inappropriate, in which case a higher back-pressure must be maintained, until the sand or water condition is remedied. Again, the back-pressure productive of the largest current oil production may result in a higher formational gas factor than is considered desirable, and considerations of economy in gas energy may compel the use of a higher back-pressure. That is, a higher back-pressure resulting in a lower gas-oil ratio and consequently higher ultimate recovery, may be preferable, even though it means a somewhat lower current rate of recovery. The validity of this consideration will depend somewhat upon the competitive conditions surrounding the acreage which the well drains.

Choice of Air or Natural Gas for Lift Operation

IN the previous article of this series,[17] it was suggested that because of its lower solubility in crude petroleum, air was preferable from the standpoint of mechanical efficiency, to natural gas as a medium for gas-lift operation. Other considerations, however, will generally make natural gas preferable if it is available in sufficient quantity and at moderate cost. The use of air as a circulating medium, for example, results in the formational gas entering the well

[15]Bennett, E. O., and Pierce, H. R., "New Methods for the Control of Gas Wells", Proceedings of the Natural Gas Association of America, 1925.

[16]Uren, L. C., "Significance of Fluid Level in Oil-Well Pumping", Transactions, American Institute of Mining & Metallurgical Engineers, Vol. LXXI (1925), p. 1301-1314.

[17]See National Petroleum News, issue of March 23, 1927.

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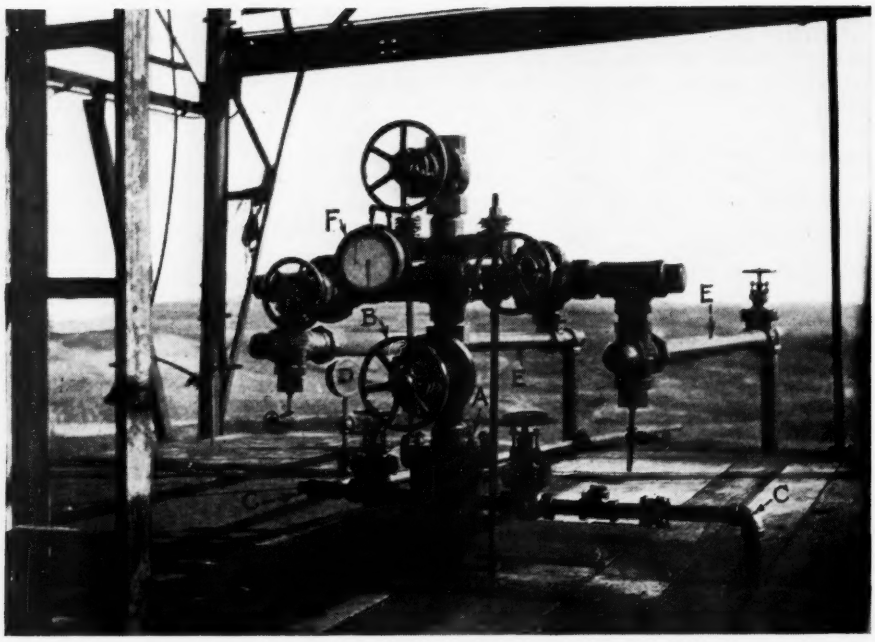

Fig. 8—Casing-head connections on a California gas-lift well. A, gas-tight casing-head; B, master control-valve; C, high-pressure gas supply to well; D, pressure gauge on gas inlet; E, oil lead-line to trap; F, recording pressure gauge on discharge connections

with the oil being contaminated, often forming explosive mixtures that are dangerous to use for boiler or fuel purposes. Extraction of the gasoline vapor from gas-air mixtures presents no insurmountable difficulties, but mere dilution of the natural gas with air, will sometimes result in a blend that is too lean to be profitably handled. On the other hand, if natural gas is used as the circulating medium, it takes up additional vapor from the oil and thus provides a highly profitable raw material for gasoline recovery.

If saline water is produced in association with the oil, on contact with air it frequently becomes highly corrosive, attacking the tubing, well casings and surface connections and appliances. The presence of certain sulphur compounds in the gas, in the presence of air and water, may also result in serious corrosion. Bennett and Sclater[11] report that eduction tubes in the Panhandle field sometimes last but a few months as a result of corrosion.

For these reasons, most operators prefer to use natural gas as a circulating medium if it is available. When gas is costly, however, and particularly if formation and leakage losses are excessive, air may be more economical. Of course, when natural gas is not available in sufficient quantity, there is no alternative but to use air.

Compressors

ALMOST every make and type of air compressor will be found in gas-lift service. All the larger compressor manufacturers are alive to the potentialities of this new field for compressor equipment and are exerting considerable "sales pressure." The problem of gas compression is often a difficult and costly one, in that a large volume of high-pressure gas is continuously required. In developing the necessary starting pressures, the compressors must be subjected to a high percentage of over-load. Large scale, heavy-duty equipment is therefore necessary. Two-stage compression is practically essential in economically attaining the pressures necessary, and inter-cooling and after-cooling of the compressed gas is customarily provided for.

SINCE gas fuel is readily available in most cases, the compressors are usually driven by direct-connected gas engines. In some cases, however, where electric power is available at low cost, it will be found more economical than gas, particularly if the gas enjoys a high-priced market, or if there is little surplus gas resulting in the recycling process.

Unless it should appear that the use of the gas-lift process is to be of very short duration, it will usually be found desirable to give careful attention to proper mounting and housing of the compressor equipment in permanent form. Some operators, however, are making use of small portable units mounted on trucks which may readily be moved about from one location to another. The latter are especially useful in making preliminary tests on new wells to determine the most desirable operating conditions, and high-pressure portable units are also frequently used as adjuncts to the ordinary compressor equipment in starting gas-lift wells requiring high initial pressures.

If several near-by wells are to be operated by gas-lift, it is generally preferable to assemble the compression equipment in one well-appointed central plant, rather than to operate a number of scattered units. Where more than one well is to be operated, it is desirable that the necessary compressor capacity should be developed with two or more small or moderate sized units, rather than with one or a few very large compressors.

The Gas Transmission System

Must be designed and the high-pressure mains and various laterals proportioned with due regard to transmission losses. If the ordinary transmission system must carry the high-pressures necessary in starting wells, due care must be taken in the selection of pipe, fittings and valves capable of withstanding the high pressures required at such times. If portable compressors that may be moved about from well to well are used in providing the high-pressure service, the main transmission lines may be no heavier than is necessary to take care of the normal operating pressures.

Casing-Heads and Lead-Line Connections

THE casing-head used on a gas-lift well must be of the gas-tight variety and should be secure against gas leakage when subjected to the maximum pressure at which it is necessary to force gas into the well. The casing-head also serves the function of supporting the eduction tube in the well and should provide security against dropping the tubing in the event that it is suspended off bottom. Various patented heads are available which close in the space about the eduction tube with packed glands and threaded connections of various forms. (See Fig. 8.) Bennett and Sclater[11] find that the ordinary type of casing-head which depends upon a packed joint for security, is likely to leak under the high starting pressures used, and recommend a special head which provides a ground, tapered, metal-to-metal joint, suitably greased and held in position by the weight of the tubing.

The lead-line connections which carry the oil and gas discharged from the eduction tube to the gas trap or separator, should be so designed as to avoid "pockets" or depressions, and in so far as may be possible, right-angle bends and fittings should be displaced by curved tubing or long-sweep 45° connections.

The Oil and Gas Separator

USED on an air or gas-lift well may be of any reliable type that is capable of taking care of the volume of fluid discharged from the well and effectively separating the gas from the oil. A separate trap should be provided for each well, and should preferably be mounted on an elevated platform so that oil may flow by gravity to the near-by gauge tanks. (See Fig. 9.) This permits discharging the gas from the trap under a pressure only slightly above atmospheric, and the trap thus offers a minimum of resistance or back-pressure on the eduction tube. For greatest lift efficiency, it is important to reduce all back-pressure in the surface connections to a minimum.

Economic Aspects of the Gas-Lift

Widespread application of the gas-lift method of oil recovery promises to have an important economic influence

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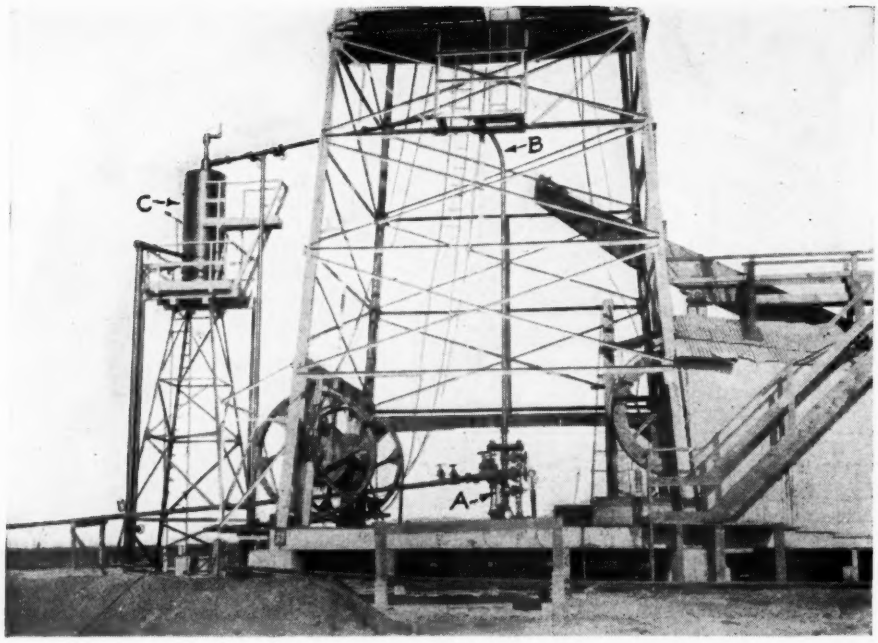

Fig. 9—Casing-head and trap connections on a California gas-lift well. A, casing-head and "Christmas tree"; B, curved lead-line to trap; C, elevated oil and gas separator

on the oil-producing industry. Due to its superior lifting capacity and its effect in stimulating the rate of oil production in "flush" fields, it is possible by this method to secure a larger part of the ultimate production of a tract of land during the early months of productivity, than is possible by other means. The average period of deferred realization of income from a producing property is thus materially reduced and the present-day value is therefore increased. In making oil property appraisals, the shorter period of realization possible by the use of the gas-lift must certainly be taken into account. The shorter economic life of oil properties exploited by this means may materially alter the well spacing and development programs in newly discovered fields.

FURTHER developments of this method of oil recovery may be expected to result in newly discovered fields being more expeditiously brought to their production peaks, a condition which will necessarily result in a more accelerated rate of decline than is characteristic of other methods. Fields will be more rapidly exhausted, and unless production is artifically controlled, we may expect even wider fluctuations in reserve oil stocks than the industry has had to contend with during recent years.

From the gross recovery stand-point, the gas-lift means greater production efficiency, both in cost of production and in ultimate recovery. Over-all crude production costs may be appreciably reduced, due to the fact that a larger percentage of the oil will be produced during the early period of production when daily yields are high and unit costs relatively low. Though many engineers have expressed doubt concerning the efficacy of the gas-lift as a means of increasing ultimate recovery, it seems reasonable to expect that this will result if the method is applied in such a way as to conserve the formational gas to the highest degree.

More extensive application of the gas-lift method of recovery will undoubtedly exert an important influence on the natural gas and natural-gasoline industries. Larger gasoline extraction plant capacity will be required, due to the greater quantity of gas to be handled, and a greater proportion of the crude will reach the market as natural-gasoline than at present. Recycling of gas from the gasoline extraction plants to the wells will result in much of the gas now marketed being withheld from present consumers. The gas will find its most valuable application in stimulating oil recovery, both in this and the closely related Smith-Dunn or Marietta Process. It seems probable that the gas-lift, the Smith-Dunn Process and the several methods of natural-gasoline extraction will bear a very intimate relationship in future methods of oil recovery, and that we may look for their simultaneous development, each as an essential adjunct of the others.[18]

Conclusions

IN conclusion, it would seem to be appropriate to briefly summarize the advantages of the gas-lift in oil production service, and to define the conditions under which it may be advantageously employed.

Under favorable circumstances, the gas-lift offers a means of stimulating the rate of production, so that a greater part of the total production of an oil-producing property is secured during early life. Shortening the period of realization increases the present value of oil-producing properties, but aside from this, a rapid rate of recovery is particularly desirable when competition is keen among neighboring producers, or where acreage is threatened by water incursion or gas drainage due to methods of recovery practiced on neighboring properties.

The gas-lift provides a means of applying and maintaining back-pressure on the reservoir rock, and by this means, of controlling the formational gas-oil ratio. When gas-lifts are so controlled as to produce oil with a lower gas factor than would be possible by other means, it is reasonable to expect that an increase in ultimate oil recovery will be secured. Due to the provision of mechanical power through gas compression, in lifting the oil, a larger part of the gas energy developed within the reservoir rock is utilized in bringing oil into the well than is the case in naturally flowing wells. Where it is desired to hold bottom water or heaving sand in check, the high back-pressures that may be maintained on the well give the gas-lift a considerable advantage. At the same time, the gas flowing into the well with the oil is fully expanded, so that the efficiency of expulsion is higher than is possible by "beaning" at the delivery end of the flow tubing.

DUE to its high capacity, the gas-lift is capable of lifting fluid from a well at a more rapid rate than is possible by any other means. Where wells are capable of producing larger quantities of oil than can be handled by plunger pumping, or where a large volume of water must be produced with the oil, the gas-lift is particularly advantageous. It is also capable of handling fluids containing large amounts of sand in suspension, and is helpful where sand conditions render plunger pumping difficult. Due to the absence of moving parts, the gas-lift has a great advantage over mechanical lifting devices in this regard. Though the daily cost of well operation is higher for the gas-lift than for the plunger pump, due to the greater capacity of the former, the unit cost of production is often considerably lower. Gas-lift wells are likely to have fewer interruptions in service than wells operated by other means, so that they are "on production" a greater percentage of the total time. There is also less labor expense in well operation and maintenance.

Where a natural-gasoline extraction plant is in operation, a greater volume of gas and often a richer gas is provided than is produced by other methods of oil recovery, and a higher yield of gasoline is therefore secured. There is ordinarily little if any reduction in the quality of the crude. The ultimate return is greater in any case, due to the higher market price commanded by the gasoline produced in comparison with what it would bring if left in the crude. Recycling of the gas, which is possible when a gasoline recovery plant is used in conjunction with the gas-lift, leads to maximum economy in lifting

[18]Lewis, J. O., See opinions of Mr. Lewis as quoted by Mr. P. Wagner in National Petroleum News, issue of March 16, 1927, p. 86.

cost and a high degree of efficiency in gas conservation.

The gas-lift can only be used in oil production when the pressure necessary to operate is less than the pressure under which the oil is stored in the reservoir rock. When the fluid levels in wells are depressed by exhaustion of pressure in the oil sands, and when the yield of oil diminishes to a small quantity, the volume of gas necessary per barrel of oil lifted will increase until the unit cost becomes excessive and other means of recovery must be adopted. The gas-lift method is therefore inappropriate during the latter stages of productivity of an oil field unless the field pressure is artificially maintained, or unless values secured in natural-gasoline recovery make the process profitable apart from the value of the oil produced. An important disadvantage of the gas-lift with certain types of oil produced in association with water, is the tendency to form emulsions which are frequently difficult and costly to dehydrate.

On the whole, the gas-lift would appear to possess certain very definite advantages and comparatively few disadvantages. Many believe that it is a method of oil recovery that is destined to play an important part in the oil industry of the future. However, the art of gas-lifting is as yet under-developed and much additional experimentation and study of the factors involved will be necessary before field practice becomes standardized and the process can be applied with assurance of success and with maximum efficiency in oil recovery.

The next article in this series, dealing with still other methods of increasing oil recovery through gas-pressure conservation, will appear in an early issue of National Petroleum News.

Fred Callahan Returns to Own Business

WOLCOTTVILLE, IND.—Fred E. Callahan, who owns and manages the Auburn-Garrett Oil Sales Co., Auburn and Garrett, Ind., and the Wolcottville Oil Co., Wolcottville, Ind., has just returned here from organization jobber work in Iowa for the Skelly Oil Co., El Dorado, Kans.

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Fig. 325
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Demand For Oil Will Increase in 1927 But at Lower Rate Than 1926

By Campbell Osborn*
Petroleum Engineer
Written Exclusively for National Petroleum News

THE amount of petroleum products that will be consumed in the United States during the current year, is a very important subject because the relationship between the actual consumption and the amount of new oil that will be produced and imported will determine the profits of the industry this year. I have previously discussed certain phases of the future oil supply in a paper presented at the 1926 meeting of the American Institute of Mining and Metallurgical Engineers.

The main consideration in measuring the demand, as in calculating the supply, is price. I look for an increase in the demand for oil in 1927, and during the next several years, though not at the annual percentage of increase that has prevailed through many of the past 10 years. My guess for 1927, on the basis of $1.25 per barrel for 35 gravity crude, would be in the neighborhood of 2,650,000 barrels of oil per day, of which, judging from past years, slightly less will be consumed during the first half of the year than during the last half.

This would be a total increase of 10 per cent over last year. If the price is further reduced, the demand will be greater, but the increase will be mainly fuel oil thrown in direct competition with coal. In fact, any increase in excess of 5 per cent will lie mainly in this channel of use. On the basis of $2.00 crude I would anticipate a slightly lower annual rate of increase than 10 per cent, during the next few succeeding years, and a price of $2.00 will probably be posted again when the present overproduction subsides.

AN increase in demand for gasoline for several years at about 10 per cent annually seems assured, despite the price range. In 1926 domestic consumption and exports amounted to about 828,400 barrels per day. My guess is that the increase during the next few years will be between 10 and 15 per cent annually, with the percentage probably nearer 10 than 15.

Statistics show that motorists, who use the major part of the gasoline, operate their cars about as much in times of depression as in prosperity. As will be shown hereafter, much of this increase will be supplied by cracking fuel oil. For reasons which will be stated, notably the extensive use of closed cars and the extension of good roads, the seasonal fluctuation in the gasoline demand will decrease in intensity. In 1920 the maximum summer demand exceeded the winter demand by 80 per cent, whereas, in 1925 the difference was reduced to 45 per cent.

An increase in demand for gasoline for several years at about 10 per cent annually seems assured, despite the price range.

Statistics show that motorists, who use the major part of the gasoline, operate their cars about as much in times of depression as in prosperity.

The automobile authorities estimate that the output of cars in 1927 will be about 4,000,000, of which 2,000,000 will be used for replacements, 400,000 will be exported and only 1,600,000 will be added to the total number in use.

The marketing branch of the petroleum industry has not paid the attention to demand commensurate with its importance. The welfare of the industry is largely in the hands of this branch, and while an estimate beyond 1927 is of questionable value, I feel that unless some new or existing superior use is developed for fuel oil, the next few years will see only moderate increases in the total demand, with good profits when oil is $1.75 per barrel or more, or small profits with large increases in consumption when oil is $1.00 or $1.25 per barrel.

The view of increased consumption that I have expressed is more conservative than that which generally prevails. During past years gasoline demand has gone upward at an average annual rate slightly in excess of 17 per cent, a unique record for any industry at any period of its life. In my judgment many oil men have been too prone to look at this increase as an index to the total demand for oil, but I find these figures misleading. While I feel that the increased demand for this product will continue for a good many years at a rate in excess of 10 per cent, I do not believe it will be directly reflected in that proportion in the total demand for all oil. The reasons for these opinions lie in the history and present condition of the motor vehicle, refining, and certain basic industries.

THAT gasoline will be used at an increasing rate for many years seems well established. Technically there is no saturation point for the motor vehicle or gasoline demand in the United States. The reasons for these statements are numerous and varied. For many years since this country passed out of the period of experimentation in automobile operation, their use has grown at a rapid pace.

At times when it was thought that the rate of growth would diminish, prices have been reduced by means of the economies of large scale production and keen competition for business, and their use has increased to the extent that it is estimated during 1926, 21,500,000 motor vehicles were registered in this country, or approximately one for every six persons.

In California and Iowa, however, where the wealth per capita is high, the ratio is one to every 3 and 4 persons, respectively. The United States is a comparatively young country industrially, and the wealth and population are growing at a substantial rate. In recent years, however, there has been a noticeable reduction in the rate of increase of car registrations; and though the end is not foreseeable, the law of diminishing returns has probably already begun to operate.

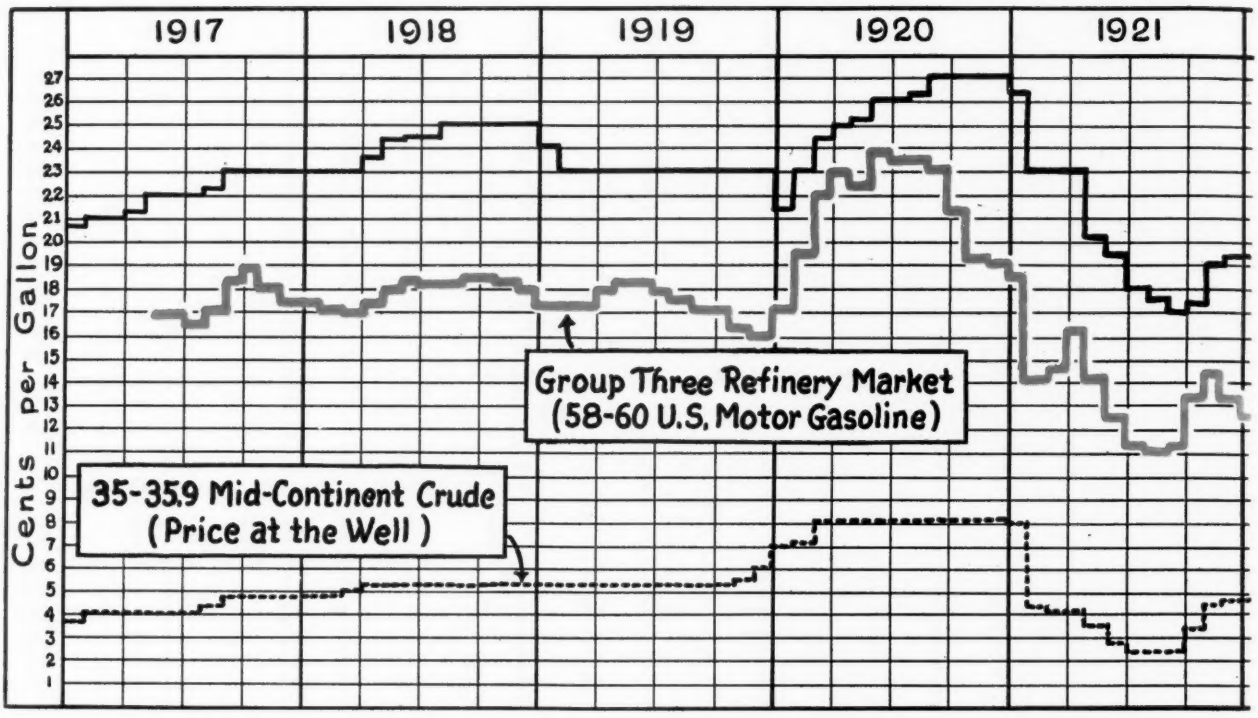
The automobile authorities estimate that the output of cars in 1927 will be about 4,000,000, of which 2,000,000 will be used for replacements, 400,000 will be exported, and only 1,600,000 will be added to the total number in use. This would be an increase of about 7.4 per cent in 1927. In recent years, moreover, the rapid replacement of open cars by machines with closed bodies has been an influence which has tended to maintain the large increase in gasoline demand. The owner of a closed car operates it as much as he would an open one in favorable weather, and more in unfavorable seasons. This influence, however, has largely spent itself.

BUT the number of passenger cars in use and the gasoline demand are only a part of the picture of the total consumption. It has been estimated that in one of the eastern states nearly half of the gasoline is consumed by agencies other than passenger automobiles. This is probably true to some extent in others. This fraction of the consumption is affected by the general business situation. Moreover, one third of the total gasoline output is now obtained by cracking fuel oil, whereas in 1920 only about six per cent was made in this way. Despite this, it is estimated that

(Continued on Page 93

*Mr. Osborn was formerly associated with the United States Geological Survey. He is now economist to the President of Marland Oil Co.

Charted Course of Group Three Refinery Price of Gasoline Compared



All prices shown in the chart above are monthly averages figured from National Petroleum News price data. Refinery gasoline market is based on price of 58-60 product corresponding to U. S. motor grade, except that

Refinery Gasoline Prices on Downward

THE downward course of the red line in the chart—the price of motor gasoline at the refinery in tank cars—is in reality a monument to the resourcefulness and efficiency of the oil industry, particularly the refining branch. It is also substantial proof of the thoroughness with which the law of supply and demand operates in the industry.

From 1918 through 1926, gasoline consumption, domestic and export, increased steadily and fairly regularly from 88,000,000 barrels to 305,638,000 barrels annually, a gain of nearly 250 per cent. In 1918, for example, we had gasolineless Sundays to enable 13,500,000 barrels of gasoline to be sent to the armies in Europe. In 1926 the oil industry took care of an export demand four times as big—and gasolineless Sundays would have upset the market by decreasing the demand in face of the large supply.

From in 1920 through the first quarter of 1927 the trend of tank car prices of gasoline has been downward, due partly to improved operating efficiency at refining plants and partly to extreme competition for gasoline business, which made price almost a secondary consideration at times.

The refinery price of gasoline in March, 1927, was down near the level of the price in November, 1923, when U. S. motor, or its equivalent then, navy gasoline, was quoted in National Petroleum News at 6⅛ to 6¼ cents f. o. b. tank cars, Group 3. This price was based on a 2.5-cent-a-gallon price for 35-35.9 gravity Mid-Continent crude, which in turn was as low as crude has been in the period under consideration.

The lowest price National Petroleum News records show in the latest decline in gasoline prices was 6¼ to 6½ cents March 21 to 23. This range was based on a price of 3.3 cents a gallon for the same grade of crude, as compared with 2.5 cents in 1923. This low price of gasoline at the refinery in 1923 was of short duration and was followed by a greater upturn in its price than followed in crude prices.

Figures in the chart are monthly averages throughout and for that reason will not compare with actual price quotations carried in National Petroleum News by weeks.

Another point to show the resourcefulness of the oil industry. This increase in gasoline demand of 250 per cent in the ten and quarter years, was met with an increase in crude supply, domestic production and imports, of only a little more than 100 per cent. The rate of increase in demand for gasoline was more than twice as great as

High and Low Prices of Oklahoma 58-60 U. S. Motor Gasoline During 1917-1926

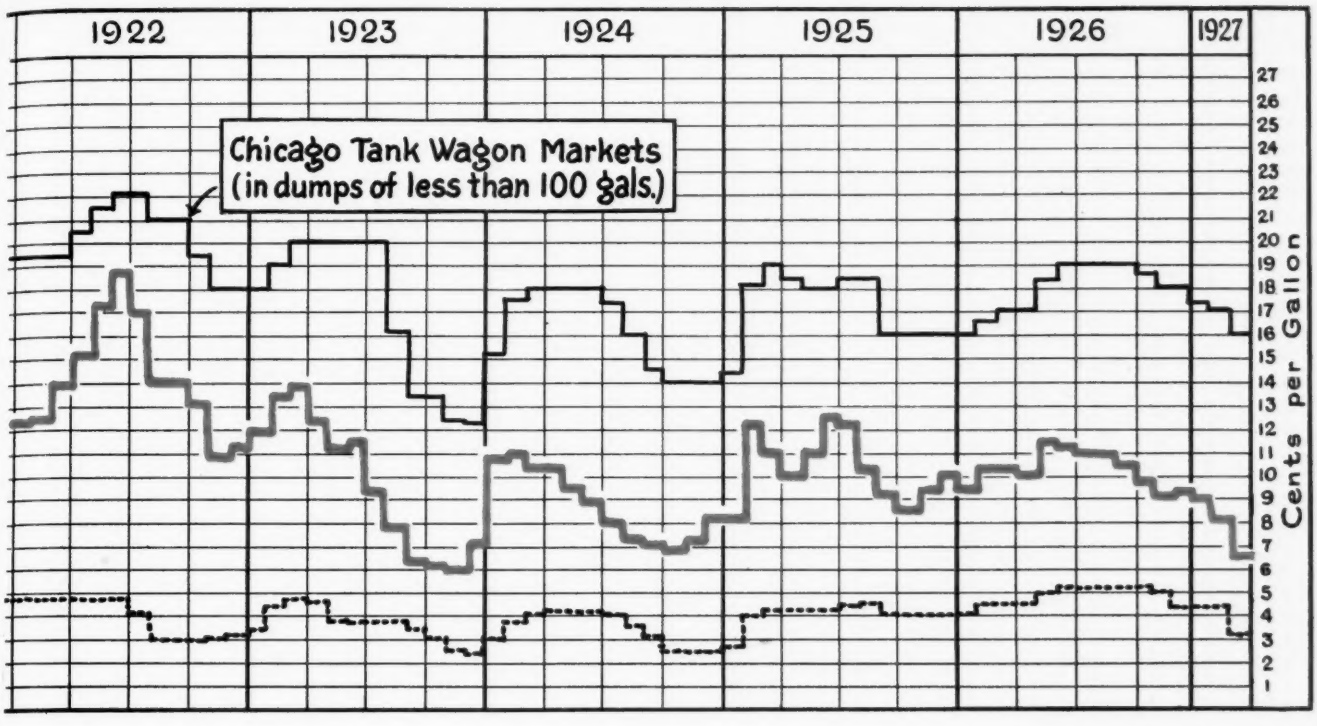
In Cents Per Gallon

Taken from Market data of National Petroleum News

High		Low	
		1917	
19.25c	(October)	16.5c	(July)
		1918	
19.25	(Sept.23)	17.0	(Feb.11-Apr.8)
		1919	
18.75	(Apr.28-June 9)	16.0	(Nov.17-Dec.29)
		1920	
24.5	(Jan.14 and 21)	16.0	(Jan.5)
		1921	
19.0	(Jan.17)	11.0	(Aug.29-Sept.5)
		1922	
19.25	(July 3)	10.25	(Dec.11 and 18)
		1923	
15.0	(Feb.26-Mar.5)	6.125	(Nov.19)
		1924	
12.0	(Feb.4)	6.50	(Oct.6)
		1925	
13.50	(Feb.16 and 23)	7.75	(Jan. 5)
		1926	
12.50	(May 17)	8.75	(Nov.22 and 29)

NOTE: Highest price of Oklahoma U. S. Motor Gasoline was 24.5c on Jan. 14 and Jan. 21, 1920, and lowest price was 6.125c on Nov. 19, 1923, according to prices published weekly in NATIONAL PETROLEUM NEWS.

with Chicago T. W. Market and Price of 35-35.9 Mid-Continent Crude



changes have been made in the final boiling point over the period. On crude prices, the 35-35.9 gravity grade has been taken as representative through the period. Top edge of line should be read against the scale for accuracy.

Trend For Seven-Year Period 1920-1926

the increase in supply of raw material. Without the adoption by the refining industry of the cracking process, to turn more of the crude into gasoline, the history of prices during this period would have been far different than shown on the chart.

That the price schedule of the oil industry responds to supply and demand like other industries is to be seen in a study of the relationship of refinery price of gasoline to tank wagon price and price of crude as shown in the chart. In most businesses the wholesale market is most sensitive to fluctuations in supply and demand, and responds most quickly with changes in its prices. This is true of the open tank car market for gasoline in Group 3, as shown in the chart. Changes in its price trend have preceded changes in tank wagon prices, as shown for Chicago, and also crude.

Another general trend shown is the widening of the area between the tank car and the tank wagon price, the margin to the marketing company in other words. In 1917, when National Petroleum News began to gather and compile prices through its own staff, the tank wagon and service station price of gasoline was the same. It was some years later that the cost of operating service stations began to be generally recognized and a 2-cent margin for the station was allowed, and more in some territories. This margin on the average is not enough to take care of the cost of operating stations however, and the increased margin to the marketer, as shown on the chart is a reflection, it is likely, of the improved service to the public the oil industry is giving, both in regard to the number of stations and also service as given to motorists at those stations.

Demand for Oil Will Increase in 1927

Continued from Page 91

about one third of the total fuel oil output is still being sold in direct competition with coal on a purely B. t. u. basis and, therefore, the yield of gasoline can be further increased without a corresponding increased need for crude oil.

In my judgment 1927 will be a good general business year, but not quite as good as 1926. Prosperity last year was largely based upon record breaking automobile manufacture, which indirectly affects numerous important industries, and upon large scale activity in the construction industry. The prosperity of the farmer is always a basic factor. The automobile factories are anticipating a 10 per cent decline in their output this year. The pentup demand for buildings that accumulated during the war and post-war periods has been largely met; rents are declining; and the construction authorities anticipate a somewhat reduced building program for 1927.

The Florida real estate boom has collapsed. The reports of the Federal Reserve banks indicate that the cotton farmer suffered a 25 per cent loss in purchasing power last year, but this was in part offset by higher prices for wheat and livestock. The net result is that the year 1927 started with a five per cent reduction in the buying power of the farmer.

Fuel oil consumption, which in 1926 represented 46 per cent of the total oil demand, would be adversely affected by a general lessening in business activity in 1927, but this will be more than offset by overproduction of crude oil and lower prices. Fuel oil consumption should range materially higher this year than last. On the basis of $2.00 35 gravity crude, fuel oil used directly in competition with coal would decline.* Lubricant and kerosene consumption, amounting to only 4 and 8 per cent, re-

*See paper entitled "Economic Position of Fuel Oil," presented at 1927 meeting of American Institute of Mining and Metallurgical Engineers.

spectively, of the total demand, is comparatively stable and is therefore of minor importance in a volumetric sense.

THE export trade is frequently cited as a channel which will continue the rapid expansion of petroleum consumption that has characterized the past, but I look only for moderate increases in the export demand for oil. It is true that the use of automobiles abroad has just begun, but I feel that economic conditions in foreign countries will not now permit the rapid expansion in the use of automobiles that prevailed in this country between 1910 and 1925. In addition it should not be forgotten that petroleum production in Russia and Persia is gaining rapidly.

Though it seems, therefore, from the foregoing evidence that, on the basis of present prices, the total consumption will be limited to a 10 per cent increase and the demand in excess of 5 per cent will consist of distress cheap fuel oil, there is abundant reason, in addition to the facts already stated, to look for conservative increases in future years. The use of buses and trucks will grow to large proportions, but this growth will depend upon the extension of good roads and the reduction of operating costs. There are probably 2,759,000 trucks and 80,000 buses already in use, which is a good beginning. In many places they are taking short hauls away from the railroads and supplanting street cars, and this tendency will increase.

The important feature of this to the oil industry lies in the fact that a bus consumes from 10 to 15, and a truck from six to eight times as much gasoline as an ordinary automobile. At present the airplane is a negligible factor in the gasoline situation, but the time is coming when it will not be.

If the bugaboo of petroleum shortage can be wiped from the mind of the consumer and the oil industry will give the attention to the consumption of its fuel oil for superior purposes that other industries give to the consumption of products of the same importance to them as fuel oil is to the petroleum industry, the use of fuel oil can and will be increased, and oil prices will not stay at unprofitable levels.

OIL is a superior fuel, but the industry cannot expect the efficient consumer to buy or erect numerous installations of expensive equipment unless he is assured by the oil industry that an adequate fuel oil supply will be available at a reasonable price for a long time.

That the sensible, efficient users are slowly going ahead in spite of the oil industry is evident from the increased use of fuel oil for relatively superior purposes during the past five years. Statistics show that there was a gain from 480,000 in 1922 to over 600,000 barrels per day, in 1925. Fuel oil in almost unlimited quantities can be thrown at any time by low prices in direct competition with coal, but years when this is done will not be good ones for the oil industry. The fuel oil supply in 1925 amounted to 460,000,000 barrels, or about 50 per cent of the total consumption of all oils, but only a little over two-thirds of it was used for efficient purposes, and in earlier years a lesser proportion.

One of the most promising comparatively new superior uses for fuel oil is for office building and house heating, but progress in this direction will be slow because the burners and oil must be sold on the basis of convenience, which will require the education of the public. Further improvement and reduction in the cost of burners, standardization, and better service on the part of both the manufacturer and oil distributor will be required. It is estimated that there are now between 250,000 and 300,000 such oil burner installations which would repuire from 17,000,000 to 20,000,000 barrels of fuel oil annually.

Theoretically it is feasible to place a burner in most of the houses in this country which are valued at $15,000 or more, and in many at less than this figure when a good cheap burner has been designed.

New Jersey Oil Men Seek to End Equipment Lending Abuses

CLEVEAND, March 31

AN effort to overcome abuses arising from the promiscuous lending of gasoline and lubricating oil dispensing equipment is being made by the New Jersey Oil Trade Association which is asking other state oil associations and equipment manufacturers for suggestions as to ways of placing equipment that will prevent much of the present trouble.

A committee has been appointed by L. L. Niedrach, president of the association, to investigate lending of equipment and to report its findings at a meeting of the association in the Washington hotel, Newark, at 12:30 p.m. April 7. James C. Elms, Jr., 196 Halsey St., Newark, is chairman of the committee which consists of a representative of a complete oil company, a jobbing company and an equipment manufacturer.

Mr. Niedrach has written other state associations asking that they have committees investigate equipment lending conditions in their territories and if possible to send representatives to the New Jersey Association's meeting. Mr. Niedrach wrote that his association was not a fighting organization and was not directing its investigation against any company or group. He also said equipment manufacturers were not encouraging the giving or lending of equipment to dealers.

Accompanying Mr. Niedrach's letter was this questionnaire:

"Do you approve of a movement to modify or discontinue the present practice of loaning dispensing equipment....

"If so, how? (Check one of the following)

"Gasoline Equipment:

"Sold outright at small profit.....
"Sold outright at cost.....
"Sold outright at installments.....

"Customer to pay for tank and installation, and only pump loaned.....

"Definite rental charged based on actual write off in three years.....

"Additional charge of 1c per gallon to be made until equipment is paid for....

"Lubricating Oil and Grease:

"Equipment sold outright at cost.....
"Equipment sold outright at profit.....
"Equipment sold on installments.....
"Definite rental charged based on actual write off in three years.....
"Deposit equal to cost of equipment charged .....
"Equipment cost to be refunded if sales exceed a definite yearly volume....

"These questions to be Answered by Equipment Manufacturers:

"Do you prefer the present method of selling direct to oil companies in large volume with minimum profit and intensive competition, as against having every retail dealer a prospect for new and more expensive equipment.....

"Can you suggest a method of placing equipment, which will do away with present abuses....."

Marland Distributor Adding Stations

WARSAW, Ind.—A bulk and service station to handle gasoline and kerosene, was planned for completion at North Manchester, Ind., by Polk Oil Co. by April 1. The station will be managed by Herman Martin, who was with the Red Top Taxi Co. for eight years.

The bulk station will be equipped with two 16,000 gallon tanks. The company will have seven drive-in service station and two bulk plants, with total storage capacity of 127,000 gallons with the completion of the new stations, according to George W. Polk. Marland products are handled exclusively.

Empire Has First-Aid School

OKMULGEE, Okla.—A first aid training school for oil refinery employes has been conducted here under the direction of J. B. Hynal, of the U. S. Bureau of Mines. The school was held here at the plant of Empire Refineries, Inc. Besides 43 Empire employes, there were 15 Barnsdall refinery men and two Okmulgee citizens who completed the work. Enthusiasm for this kind of school is being exhibited according to reports.

Natural and Artificial Gas Lift Will be Combined in Future

By S. F. Shaw
Consulting Engineer, San Antonio, Texas

IN view of the rapid progress being made in the improvement of petroleum production through the use of engineering methods, it does not seem amiss to discuss what appears to be the probable method toward which we are tending.

We will first assume a new field, penetrated by only one drill hole, and the well producing 1000 barrels or more per day with gas pressure similar to such fields as Tonkawa, Seminole, Huntington Beach or Ventura.

Control of this first well will be maintained, beginning with the initial stage, either by choke or air-lift tubing of careful design, to reduce the quantity of gas as closely as possible to that absorbed in the oil actually lifted; in most fields when first opened there is several times as much gas dissolved in the oil as is required to move it through the sands and to lift it to the surface.

The fluid will be delivered to separators from which the oil will gravitate to the receiving tanks and the gas will go to a gasoline plant, as soon as one is built, for the removal of the gasoline content. New wells will be drilled from time to time and the production will be handled as for the first well.

In the course of time, the removal of oil and gas will result in diminishing the pressure of the gas in the pool. Careful record will be kept to show the rate of decline of pressure, and as soon as this pressure has declined to a point at which there is less gas dissolved in the oil lifted than is required to move it through the sand and bring it to the surface, compressed gas will be admitted to the well to assist the gas lift, which has to this time been operating as a natural gas lift, but from now on will operate as a combination of natural and artificial gas lift.

The handling of the oil and gas so produced will continue as previously, but from this point it becomes of the greatest importance to strive for the highest air-lift efficiency possible to reach, otherwise gas will be consumed in excessive quantities. There is much improvement to be sought as indicated by the low lifting efficiencies prevailing where 5 per cent to 10 or 15 per cent is now the rule, instead of 25 to 50 per cent which is attainable.

DURING operations so far there has been no attempt to restore any of the gas to the sand, the only gas reused being that employed as aid to the gas lift; but a point will be reached, which will be determined by test and experience, where part of the gas can be restored to the sand through certain selected wells, which will thereafter be employed only for this purpose. It is desirable to restore gas to the sand as early as possible since a maintenance of high pressure will serve the following purposes:

1. There can be maintained a high differential pressure between the sand and the well, thereby providing the means of moving the oil through the sand and at the same time permitting a pressure to be maintained at the well sufficient to enable a gas lift to operate successfully.

2. Viscosity of the oil will be held at a low point thereby enabling the oil to be moved through the sand with minimum loss of pressure.

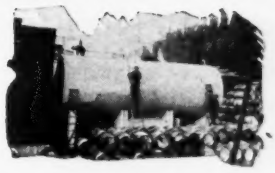
3. Absorption of the gas in the oil will be more effective and the pore spaces will, in consequence, become more readily filled with the fluid thereby reducing the tendency toward by-passing, or channeling.

4. Encroachment of edge water will be delayed to maximum extent.

When the stage of operation is reached that the gas has established a complete cycle through the sand to the well; then to the surface with the oil; through the compressor plant; and back to the sand; the path of the gas will be first through the separators to the low pressure cylinder of the compressor, thence to the condenser coils or to the absorption tower to extract the gasoline, then to the high pressure cylinder, and then distributed, partly to the sand for maintaining the pressure, and partly to the gas lift.

With this completely closed cycle the decline in production should ultimately approximate that of almost complete exhaustion of the oil in the sand. Who can say what then will be the degree of recovery reached? Only actual performance will determine this point, but instead of 15 to 25 per cent accepted as the probable average percentage recovered at present it would not seem improbable to expect a recovery of 75 to 90 per cent, and conservation will then have reached a high degree of efficiency.

NEARLY all of the steps mentioned above have been started, though most of them have not yet reached a perfected stage. A large number of air and gas lifts are now in operation but the efficiencies obtained as a rule are very low. In order to carry the above cycle to the final stage of practical exhaustion of the sand, it will probably become necessary to operate these gas lifts with low submergence, owing to the comparitively low pressures that



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SPRAYED or flowed on the painted surfaces of storage tanks, an OAKITE solution will often save repainting—by completely removing all discolorations and coatings of oil, dirt and grime. Paint is left clean and bright. Like new! And money is SAVED!

Write for booklet, "CLEANING IN THE OIL INDUSTRY." Or tell us your problems.

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The Tret-o-lite Process is RAPID!

Time required only for mixing and settling. Mixing often completed during normal flow of oil from well to tank. Settling takes only the time for normal oil and water to separate.

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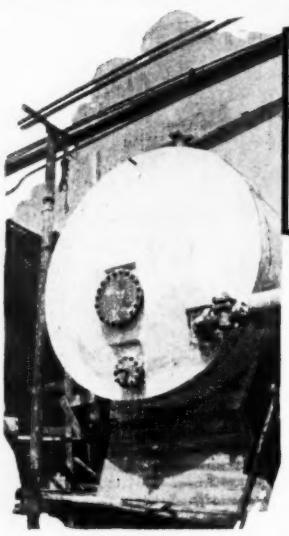
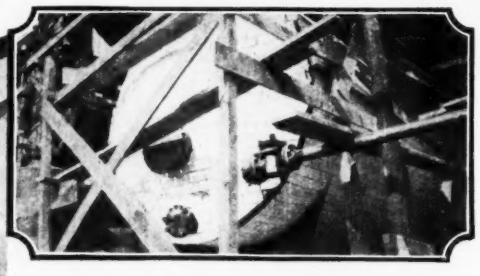
St. Louis, Mo.





The Leamon Process Still, pictured above, is insulated with five inches (2 courses) of Silo-O-Cel Standard Brick. Sealed with Sil-O-Cel Hard Finish Cement this construction presents an even, jointless surface that may be waterproofed effectively at minimum cost.

Although we supply Sil-O-Cel Insulation also in the form of block and cements, as well as powder and C-3 aggregate, we strongly recommend the use of brick for the insulation of this kind of equipment.

Why Brick Insulation?

The easiest way to insulate steel surfaces against heat radiation losses is with Sil-O-Cel Insulating Brick. The most efficient insulated construction also is attained by using insulating material in this form. And the cost is lowest, by far when you compare on the basis of heat savings and length of service from the insulation.

SIL-O-CEL

On the shells of stills, absorbers, heat exchangers, towers and other steel equipment, curved or flat, Sil-O-Cel brick in thicknesses of 1¼ inches or 2½ inches are simply cemented to the metal and secured in place by wire reinforcing. A final coating of Sil-O-Cel Hard Finish Cement seals all joints and leaves an even, unbroken surface, an ideal base for a water-proofing compound, such as Celcote.

No Gapping Joints

There are no gaps in this insulated construction, where air could get through and circulate inside the insulation. Every bit of the insulation is in absolute contact with the steel—and every bit of the steel can be covered. Removing a portion of the insulation for attention to the steel underneath, entails no great amount of trouble. The insulating brick removed can be replaced with practically no loss.

Cuts Warehouse Costs

An important advantage of Sil-O-Cel Insulating Brick is their wide adaptability. The "fire brick size" insulating brick that you use in still-furnace walls and boiler settings, where direct temperatures may run as high as 1600° F., are the most efficient insulating material you can get for any heated equipment in refinery or gasoline plant. You stock only one grade, one shape, one size of insulating material when you standardize on Sil-O-Cel brick insulation over all hot steel surfaces.

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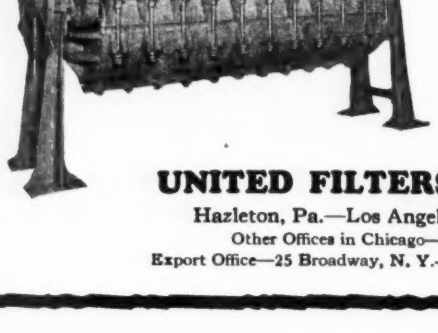
Cut Labor Costs Squarely In Half



MID-CONTINENT PETROLEUM is now using Sweetland Filters for filtering lubricating oils. They report the amount of labor required as just one-half over former methods. Labor saving is only one of the several advantages gained by using Sweetland Pressure Filters.

UNITED FILTERS CORPORATION

Hazleton, Pa.—Los Angeles Office, Central Building
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will prevail, particularly in the later life of the field.

Owing to inefficient designs, operations with low gas-lift submergence is attended with such low efficiency at the present time as to render gas lifts impracticable at this stage, and yet it is possible to obtain acceptable efficiency with low submergence as has been proven by the writer in unwatering mines, and it is expected that in the near future the writer will have the opportunity of demonstrating that low submergence can also be employed efficiently in oil well operations.

The steps involving compressing the gas to any desired pressure, and of extracting the gasoline either by compression of absorption methods have been worked out quite satisfactorily. Flooding the sand with compressed gas under low and medium pressure has been successfully carried out, but the use of high pressures, 400 pounds or higher, is in the experimental stage.

The Union and Shell companies are supposed to have already carried on work involving high pressures for several months, in the Dominguez field, California, and it is to be hoped that some data on this subject can be given out in the near future.

Beyer Heads Illinois Fred G. Clark Co.

CLEVELAND, Mar. 31.—The Chicago branch of The Fred G. Clark Co., whose main office is at Cleveland, has been incorporated as a separate corporation, under the name of The Fred G. Clark Co. of Illinois, with offices and warehouse at 1031 West 37th street, Chicago, and branch warehouse at Lincoln, Nebr.

While the new company will be a separate and distinct unit, there will be no change in policy. It will operate in the same territory as formerly, and will handle the same brands of lubricating oils, continuing as sales representative on HyVis, the nationally advertised brand of pure Pennsylvania oils, manufactured by the Clark company.

Bruce E. Beyer, who has been associated with the Chicago office for the past 10 years, the last three as manager, is president of the new corporation.

Oil Man Heads Commerce Chamber Third Time

CARLINVILLE, ILL.—The re-election on March 1 of Frank A. Muench, oil jobber, as president of the Carlinville Chamber of Commerce, marks the beginning of his third term in that capacity.

Mr. Muench is well known in oil jobbing circles. He is president of the Diamond Kerosene Co., Inc., and a director of the National Petroleum Marketers Association, which has now consolidated with the Independent Oil Men of America.

Visiting Around the Refineries

By Paul Truesdell

National Petroleum News

How Far Are We Going With Volatility?

THE American motorist is demanding and the American refiner is furnishing gasoline of increasingly high volatility. But some interesting thoughts on this subject were brought out in discussion at a recent meeting of automobile engineers and mechanical engineers in Buffalo. After A. Ludlow Clayden of the Sun Oil Co. told what gasoline is and is likely to be in the future, discussion turned to volatility.

As reported in the March issue of S. A. E. Journal, Dr. George Granger Brown of Michigan, heading the research work of the American Association of Natural Gasoline Manufacturers, stated that the volatility of a fuel is fully as important as its anti-knock properties. He pointed out, however, that volatility is of more than one kind. High volatility at low temperature is wanted in cold weather, but Dr. Brown said that we do not care about complete volatility at high temperature.

Fuels that are so volatile they vaporize completely at low temperature in the manifold, actually show a decrease in power and an increase in consumption when the engine is hot, he said. This seems to raise the question, where is the economic volatility point of gasoline for use in trucks or other heavy duty?

Dr. Brown went on to say: "So long as builders are providing cars with highly heated manifolds, it is necessary, to obtain the best results when the engine is warmed up, to have a fuel of sufficiently low volatility, since fuels that require a high temperature for vaporization give better performance when the engine is heated highly."

From this standpoint it would appear that for a long time to come there will be a market of more or less magnitude for gasoline of U. S. Motor specifications, or even higher end point.

A New Seaboard Shipping Terminal

DAN E. SULLIVAN, chief engineer of the Pure Oil Co., describes in the March issue of Pure Oil News, the seaboard terminal that has just been bought by the company at Savannah, Ga. Gasoline, kerosene and fuel oil will be shipped to the terminal from the company's Smith's Bluff, Tex., refinery by tanker and barge, and will then be distributed by rail to Northern Georgia and Carolina points.

The terminal facilities consist of two 64,000-barrel tanks, one 11,000 barrel tank and two 35,000-barrel tanks, connected to the dock with 12-inch, 6-inch and 4-inch pipe lines which will make rapid unloading of tankers and barges possible. The station also has a brick boilerhouse with two 40-horsepower return tubular boilers and an office building. The property was bought from The Texas Co. which used it as a fuel oil terminal. John C. Hogg, formerly of the Marcus Hook refinery, is superintendent of the terminal with A. R. Spann, who had charge of it for The Texas Co., as his assistant.

Making Work in Refineries Safer

E. J. SENNE of the Vacuum Oil Co., points out in Vacuum Oil News that due to the efforts made by company officials and men to promote safety, accidents in the company's plants have decreased in the last five years more than 75 per cent. In 1920 the company had 213 lost time accidents in 1926, 55. This, notwithstanding that the number of employees has increased about 10 per cent in that time, now standing at about 4000.

Accompanying the article is a double page containing photographs of 22 employes, none of whom has been with the company less than 35 years and none of whom has had an accident within the past 25 years. Three of these men have a record of 50 years of service and one 53 years. Two of the 50-year men had never had an accident in that time.

Paying Attention to Small Savings

FOR two years, according to the superintendent of a Mid-Continent refinery, it has been the rule to reclaim oily rags used about the plant. These were thrown into covered, metal cans, periodically collected and washed. It is only in the past few months that the quantity of reclaimed rags returned for use has been checked. It was found that only half the quantity issued from the rag house were returned. Now efforts are being made to bring up the recovery to 75 per cent of the new rags issued, on the theory that it is extravagant to use new rags for uses where reclaimed rags would serve as well. A small matter, but typical of the general tightening up in refinery operation that is going on everywhere.

Oil Contact Filtering Plant Described

H. L. KAUFFMAN, consulting petroleum technologist of Denver, has an article in the March issue of Chem. & Met. in which the contact filtering plant of the Parco, Wyo., refinery of the Producers & Refiners Corp., is described. Mr. Kauffman states that the acid treated clay is applied to the oil in the form of a pulp containing from 25 to 30 per cent of solids. The newer clays of the bentonite type, finely divided, Mr. Kauffman says, are from five to 10 times as efficient as 100 mesh fullers earth. He predicts that the industry will see a great increase in the use of this method of filtering.

New Refinery Head at Louisiana Plant

B. P. CRITTENDON, formerly of the Beacon Oil Co., Boston, has been made head of the refinery of the Louisiana Oil Refining Corp., Shreveport, La., it is announced in the February issue of the Loreco Diamond. Mr. Crittendon succeeds C. A. Soars who resigned Feb. 15. Mr. Crittendon, who is 38 years old, was born in Rochester, N. Y. He is a graduate of the Massachusetts Institute of Technology and spent six years in the manufacture of explosives before going with the Beacon.

Refinery Executive Heads Civic Body

RALPH H. KINSLOE, assistant manager of refineries of the Magnolia Petroleum Co., Beaumont, Tex., has been elected president of the Beaumont Chamber of Commerce, according to the March issue of Magnolia Oil News. Mr. Kinsloe was first vice president of the chamber in 1926 and since he has been a resident of Beaumont has devoted considerable time to this work as well as to the Young Men's Business League.

Our Industry—A Page of Facts and Personalities

National Petroleum News

By Paul Wagner

THE H. A. Compeigne interests of Denver, who are also connected with the Franco-Wyoming Oil Co., are heading a syndicate now completing arrangements for taking over the oil royalty and surface rights to the J. T. McElroy ranch, in Crane county, Texas. It is well within the boundaries of this 130,000-acre property that the Gulf Production Co. has been going ahead slowly with development of its unit-controlled McElroy ranch oil field. The deal, which involves total consideration of $2,500,000, also calls for transfer of about 7000 head of cattle, horses and mules, together with ranch equipment. The McElroy ranch embraces roundly 69,000 acres of fee land and about 61,000 acres of grazing land leased from the state of Texas. The dozen or more wells of the Gulf on the McElroy ranch have been kept pinched down from a potential production of between 15,000 and 20,000 barrels daily because of lack of outlet facilities for the crude.

* * *

HERCULES OIL CO. has been formed at Vinton, La., to operate a five-acre tract in the area of revived operations in the old Edgerly field. The lease to be tested is adjacent to the recently completed No. 4 Hunter well of Rex Petroleum Co., which came in for 500 barrels, and 800 feet from a new test of Gulf Refining Co. of Louisiana. Officers of the Hercules are J. G. Sutton of Vinton, president; William Lucas, Lake Charles, vice president; J. S. Wetherell, Vinton, secretary-treasurer. Others interested in the company are William S. Greene of Lake Charles, Clarence Fox of Lake Arthur and William G. Strange of Singer, La.

* * *

WILD life in the Oklahoma Panhandle isn't altogether "what you might think." Near Boise City, Cimarron county where W. R. and W. E. Ramsey recently drilled the discovery well of a new producing province, it includes young deer (the four-legged variety). R. J. French, land man for the Ramseys, recently captured one on the site of the new mushroom town that is to be known as Ramsey. He turned it over to a nearby rancher so the animal could be returned to the range.

* * *

E. C. Clayton, who has been stationed in the Smackover, Ark., district for The Texas Co., has been transferred to Alexandria, La., where he will make headquarters while looking after testing operations in the central part of the state.

REX G. HAMAKER

REX G. HAMAKER, chief of the engineering department of the Humble Oil & Refining Co., Houston, since 1920, has functioned liberally in the development of the American Petroleum Institute's standardization program, taking a prominent part in sub-committee work. Prior to taking his present position, Mr. Hamaker had been division engineer of the Humble in the Ranger district development in 1919-1920, with headquarters at Cisco. He was civil and mechanical engineer with the Standard Oil Co. of California, at Whittier, from 1916-1919.

Hamaker, who was born at Santa Ana, Cal., November 6, 1892, got his common school education in Southern California. He was graduated from Leland Stanford University at Palo Alto, with degrees of A. B. and C. E., in 1916. His affiliations include the Phi Gamma Delta fraternity and the Houston Engineers club.

* * *

THE city of Eastland, in the county of the same name, is the first west Texas municipality to have an income from oil production. Lew Teatsorth recently completed a 50-barrel well at 1410 feet on the 186-acre tract bought by the city of Eastland several years ago for a municipal water reservoir. The reservoir tract is about a mile east of the town itself. Other drilling operations, which are planned, may aid in materially lessening Eastland's city taxes.

COLLECTION of inheritance taxes on the estates of John Sealy of Galveston and S. B. Burnett of Fort Worth will be sought by the state of Texas in spite of bills passed by the legislature seeking to exempt payments because of educational bequests. Sealy, a Galveston banker, was widely known in the oil industry as chairman of the board of trustees of the Magnolia Petroleum Co., before complete control was taken over by the Standard Oil Co. of New York. Burnett, widely known as a pioneer rancher, accumulated a second fortune from oil bonuses and royalties before his death.

Inheritance taxes claimed by the state as due from the John Sealy estate are figured at approximately $1,500,000. Most of Sealy's estate was left to the University of Texas. The amount of inheritance taxes claimed due on the S. B. Burnett estate is roundly $155,000. Burnett left most of his estate to his widow, Mary Couts Burnett, who later bequeathed approximately $4,000,000 to the Texas Christian University at Dallas.

Decision to press for inheritance tax payments follows a supreme court ruling that the legislature had no power to remit any debt due the state in the past but could act only with regard to the future.

* * *

JEFF E. HOOPER, general production superintendent of Sinclair Oil & Gas Co., in the Gulf Coastal division, was working around the rig with his tool-pusher recently in one of the South Texas fields. He was short a man on the crew when a "boll-weevil" applied for a job. There were plenty of experienced men to be had in the territory, so Hooper took pains to establish whether or not the applicant knew his stuff.

"Where have you been working?" he asked.

The "boll-weevil" named a nearby Texas field.

"And who have you been working for?" he continued.

"Jeff Hooper," came the reply.

"That's not a very good recommendation," the Sinclair general superintendent said, but querying further asked:

"What kind of an egg is that—Hooper to work for, anyhow?"

"He's a—hard egg," the "boll-weevil" answered, only to turn all kinds of colors when the Sinclair superintendent said:

"I'm Jeff Hooper."

* * *

SHIFTS of personnel in the producing department of the Magnolia Petroleum Co. include the transfer of Joseph L. Pearce from the Cotton Valley field to the Haynesville, La., warehouse, under Superintendent A. H. Henderson; and the placing of R. W. Machesney as an assistant in the Earlsboro, Okla., field office, under Superintendent J. W. Tipton.

Locke Returns From Visit to Europe

Staff Special

CHICAGO, March 31.—"Spend a couple of months in the Old Country and learn to be a better American," is the advice of A. T. Locke, a Chicago oil jobber who landed in New York from Paris last Friday on the White Star liner Olympic. He reports a delightful trip of 11 weeks, says he was not sick a minute at sea, gained five superfluous pounds and learned a lot.

"Sometimes we Americans boast a lordly line of ancestry," Mr. Locke observed. "I am proud of my European forefathers, but the particular ancestor I honor most is the one who had the foresight to migrate to the United States, years ago. I am not casting aspersions at Europeans. They have my sympathy. They are in a sad plight financially. I would love to see the United States make a settlement of the war debts that would be easier on them."

Mr. Locke visited the Madeira Islands and Gibraltar, toured Spain and touched at Algiers on the coast of Africa. He did the French Riviera in pleasurable fashion, visited Athens and Constantinople, toured the Holy Land and saw Jerusalem and Nazareth. He saw Cairo and Alexandria, Egypt, and touched at Syracuse on the island of Sicily. He made a general tour of Italy from the Alps to Venice, and had a look at Switzerland. Between Naples and Athens he had the rare opportunity of seeing the volcano, Stromboli, in eruption, looking from the deck of a ship through a Mediterranean storm. He looked down into the crater of Vesuvius, examined the things that came out of Tut's tomb, and tasted many different things to eat and drink.

Mr. Locke did the things tourists usually do in Paris but did not find it so interesting as London where he took occasion to see the guard changed at Buckingham Palace and purchased some things in haberdashery that will make the American Oil Men's Association jealous next month when they hold their convention in the Congress hotel which he is making his home temporarily.

"I heard gasoline called a variety of different things," Mr. Locke said. "And I saw it marketed in a lot of primitive ways. However, there are visible dispensing pumps in most towns and I found a drive-in filling station at Basel, Switzerland. European motors are small. They don't use much gasoline. American motor oils are advertised almost all over Europe, several different brands of them.

Mr. Locke is the head of the firm that bears his name, engaged in marketing Locke's Better Gasoline. His office is in the Tribune Tower, Chicago.

TRANSIT PUMPS

for large and small pipe lines

Descriptions on Request.

NATIONAL TRANSIT PUMP & MACHINE CO.

OIL CITY, PA.

District Offices: **New York, Pittsburgh, Tulsa, Cleveland, Houston and Denver, Philadelphia.**

Wholesale? or Retail?

there is a Marion Metal Building for practically any purpose

Marion Metal Buildings are made of galvanized steel. The panels are of standard sizes and have a patented interlocking joint that gives strength to the building and makes a weather-tight joint. They are easily and quickly erected. A man and helper with pliers, hammer and screwdriver can erect one of these buildings in a day. They can be easily taken down and moved to new location if desired, without loss. They are fireproof and lightning proof when properly grounded.

Around refineries they are used as Sheds for Stills, Tool Houses, Machine Shops, Pipe Shops, Car Shops, Paint Shops, Wax Plants, Pump Houses, Power Houses, Auxiliaries and Garages.

In the oil distributing and marketing division they are used for Compounding Plants, Grease Plants, Warehouses, Bulk Filling Stations, Retail Filling Stations, Garages, etc.

The coupon below is for your convenience.

Marion Machine, Foundry & Supply Co.
Box T685, Marion, Indiana

We desire further information concerning your Metal Buildings. Please Mail Catalog No. 7.

Name _____

Address _____

ROBERTSON METAL SIGNS

Scan the roster of distinguished firms that come to Robertson for metal signs

—each ever on guard against association with anything ordinary, but ever searching for the most effective sign to flash its message to the passerby.

What, indeed, could be more indicative of the sound advertising value of Robertson signs than the fact that scores of outstanding firms prefer them?

Central Petroleum
Champion Spark Plug
Eveready Batteries
Paragon Refining
Citrus Products
El Verso Cigars
San Felice Cigars
Pennzoil Company
Standard Oil Co.
Disston Saws
Coca Cola
Pierce Petroleum
Eastman Kodak
and numerous others already announced, or to be announced, in these pages.

Let us submit samples—also prices. The latter will also prove interesting.

The W. F. Robertson Steel & Iron Company

The Elwood-Myers Co. Div.

Springfield, Ohio

A Robertson Sign
Watch for them

Here & There

National Petroleum News

JACK LANDIS CALDWELL

At 3½ years, Jack is getting an early start in the oil business. He is the son of Paul B. Caldwell, Nebraska representative of the Roxana Petroleum Corp., St. Louis, Mo. In a few more years he will be telling "daddy" a thing or two about the business

Colonel G. A. Burrell of Pittsburgh is engaged in making a valuation of the Murphy Oil Co.'s oil producing properties in Pennsylvania and West Virginia, and also remodelling the natural gasoline plants of the Equitable Gas Co., one plant of the United Fuel Gas Co., and one of the Manufacturers Light & Heat Co., putting in special bubble absorbers and stills.

* * *

R. M. Hill, district sales manager of the Detroit, Mich., district of Galena-Signal Oil Co. (of Texas), has been confined to his home since March 12 because of illness. He expects to be out in his territory again before the middle of April.

* * *

Charles T. Noblin, of the accounting department of the Pan American Southern Petroleum Co., Jackson, Miss., kept his recent marriage such a secret that none of his co-workers knew it until they read it in the newspapers.

* * *

Charles H. Jessup, service station operator of Ithaca, Mich., is planning a trip to the Pacific coast this summer with Mrs. Jessup.

* * *

Milo Hoppis has recently been appointed manager at Warsaw, Ind., for the Roxana Petroleum Corp., St. Louis, Mo.

George D. Locke, vice president of Barnsdall Refining Co., Chicago, was a recent visitor in his native state, Arkansas. On Mrach 20 he was in Little Rock prior to his annual journey to Hot Springs, Ark. Mr. Locke had lived in Fayetteville and Rogers, Ark., previous to 1918, and had been a director of a chain of public utility properties in that section.

* * *

K. A. Huscagh, manager of the lubricating department of the Pan American Southern Petroleum Co., Jackson, Miss., and George S. Norman, manager of the lubricating department, southern division, have just completed four lectures on lubricating oil. All bulk plant commission agents in Jackson territory were asked to hear the lectures.

* * *

Roy Hooper, vice president in charge of advertising for the Sinclair Companies, and L. P. Lochridge, manager of domestic lubricant sales, both from New York, were recent visitors in Houston. They took part in a sales conference with the Houston district organization, which is in charge of John R. Herr.

* * *

Roy B. Jones, president and general manager of the Panhandle Producing & Refining Co., Wichita Falls, Tex., and William Brookover, assistant to Mr. Jones, spent a week recently looking over properties of the Panhandle Oil Co. in Mississippi, of which C. H. Converse is president.

* * *

C. B. Sullivan, assistant to John W. Carnes, vice president of the Sinclair Refining Co., New York City, recently spent a week with J. A. Jones, sales representative for the company in West Virginia, looking into marketing conditions in that state.

* * *

H. S. Palmer, owner of the Liberty Bell Gasoline Co., Wooster, O., has just returned from a month's trip in the southeastern states. Mr. Palmer went as far south as Miami, Fla. He reports finding a nice increase in gallonage over a year ago.

* * *

A. A. Garrabrant, Atlantic Refining Co., Philadelphia, spent a recent week-end at the Hotel Traymore at Atlantic City, N. J., with his family.

* * *

J. F. Hull, lubricating salesman for the Standard Oil Co. of New Jersey, has been transferred from Logan, W. Va. to Asheville, N. C.

* * *

W. J. Brundred, president of Brundred Oil Corp., Oil City, Pa., has been spending several weeks in the Mid-Continent fields.

Variety of Work Is Spice To Ohio Woman Jobber

MRS. J. E. SMITH

Who is well known in oil jobbing circles. She is the wife of J. E. Smith, who operates the J. E. Smith Oil Co., Washington Court House, Ohio

CLEVELAND, March 31.—Perhaps woman's work is never done, but if she happens to be in the oil business, she does much of it.

Mrs. J. E. Smith, one of the country's leading women oil jobbers, puts in as busy a day at her headquarters at Washington Court House, Ohio, as any other oil jobber who must build stations, install storage, keep tab on equipment, watch credits and bank balances, write "ads", promote gasoline sales, and keep abreast of all the other problems that come up in the general conduct of an oil marketing business.

When she wants the public to know more about her gasoline, she writes an "ad". When she needs a good accounting system, she devises one. When her tank cars demand a receipt system, she compiles that, too.

Starting as a stenographer and filing clerk about 10 years ago for J. E. Smith, head of the J. E. Smith Oil Co., Washington C. H., O., Mrs. Smith has not only taken over the duties of secretary, treasurer, advertising manager and "commanding officer" of general business routine, but she has also devised her own accounting system which is now successfully used by the company.

Mr. and Mrs. Smith together own and operate the company. Mr. Smith attends to purchasing and all outside work. A story about this company's activities was published in the Sept. 29, 1926 issue of National Petroleum News, page 44.

MARTELL, NEB.—A new gasoline pump has been installed by Gerbig Oil Co. at the Spellman Garage here, and also at Kramer, Neb., according to Fred E. Gerbig, proprietor of the company.

KANOTEX

Precision in Refining Methods Insures Uniformity in Quality

Jobbers and dealers handling

KANOTEX

Petroleum Products

know that these products are *always* uniform. Customer complaints are unknown. That's one of the principal reasons why jobbers and dealers who handle Kanotex Products NEVER change to any other line.

If you are interested in giving your trade the best that money can buy, write or wire us for further information.

The Kanotex Refining Co.

Phone L. D. No. 4 Arkansas City, Kansas

FORTY years successful experience; plant fully equipped for fabricating plate up to 1½" thick. Your specifications and inquiries are invited.

Pressure Stills for Cracking Process - Fractionating Towers - Dephlegmating Towers, Bubble Towers - Heat Exchangers - Agitators - Steam Stills - Crude Stills - Condenser Boxes, Run Down Tanks - Blending Tanks - Hemispherical Tanks - Blow Cases - Acid Tanks, Compounding Kettles - Storage Tanks to 80,000 Barrels - Smoke Stacks and Breechings, etc.

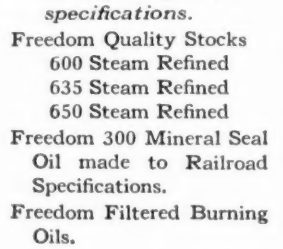
THE BIGGS BOILER WORKS CO., Buchtel and Bank Sts., Akron, O.; 300 Madison Av., New York

FORMULA
for a
Business Getting 100% Pennsylvania Motor Oil

First— A quantity of 450 Bright Stock (Sharples process) *refined at the Coraopolis plant of The Freedom Oil Works Co.*

Second— A quantity of 100% Pennsylvania Crude Neutrals *refined at the Freedom Plant of The Freedom Oil Works Co.*

Third— Blend by specialists of The Freedom Oil Works Company according to YOUR specifications,—and you can be sure that the specifications you get will be MINIMUM specifications.



This is the formula used for years by many of the country's leading jobbers. They recommend that you try it. Immediate shipment can be made in tank cars, compartment tank cars, barrels, or drums.

Also available for immediate shipment

450 Bright Stock (Sharples Process) which requires less Neutral to blend to the ordinarily required specifications.

Freedom Quality Stocks
600 Steam Refined
635 Steam Refined
650 Steam Refined

Freedom 300 Mineral Seal Oil made to Railroad Specifications.

Freedom Filtered Burning Oils.

The Freedom Oil Works Company
Freedom, Penna.
Established 1879
Refineries at Freedom and Coraopolis, Pennsylvania

FREEDOM

New Stations Built or Being Built

Detroit, Mich.—Charles E. Austin has begun construction of 10 service stations here. They will be completed about June 1 and will be operated under the name of the Sunny Service Oil Co.

* * *

Gallatin, Mo.—Bulk station is being erected at Lucerne, Mo., by Joseph N. Martin, a partner in the Martin Oil Co. here, and a service station is being erected at Lancaster, Mo.

* * *

Denver, Colo.—Continental Oil Co., with headquarters here, will build 14 service stations on the Yellowstone highway from Idaho Falls to Yellowstone Park.

* * *

Fairmount, Min.—John A. Croissant completing service station. Another service station will be built here by G. A. Tallberg and one by G. D. McKisson.

* * *

Kansas City, Mo.—Five bulk and service stations will be built by the White Eagle Oil & Refining Co. in North and South Dakota.

* * *

Texarkana, Ark.—Four filling stations will be built here, one each by: T. R. Steel, Ernest Porcher, Custer Kink and W. A. Kelley.

* * *

Roberts, Wis.—Earl Brown will install bulk storage which will be operated as the Roberts Oil Co.

* * *

St. Cloud, Minn.—Farmer stockholders of Farmers Creamery Association here plan to build filling station.

* * *

Mitchell, Neb.—H. E. Frye Oil Co. is building bulk and service station at Lyman, Neb.

* * *

Washburn, Wis.—Standard Oil Co. of Indiana plans to erect filling station.

* * *

Wellsville, O.—Standard Oil Co. of Ohio is building service station here.

* * *

Strawberry Point, Ia.—Homer B. Grove will erect filling station.

* * *

Brinkley, Ark.—Magnolia Petroleum Co. building filling station.

* * *

Boise, Ida.—Goodman Oil Co. is building service station here.

* * *

Rising Star, Tex.—Frank Bucy will build filling station.

* * *

Afton, Okla.—W. W. Pearce completing service station.

* * *

Minneapolis, Minn.—Lakeland Oil Co., with headquarters here, will erect bulk

plants at several points in the Dakotas during the spring and summer, according to E. B. McCartney, president.

* * *

Bowling Green, Mo.—Roxana Petroleum Corp., St. Louis, Mo., will build filling station here.

* * *

Bayard, Neb.—Maxon Motor Co. is completing building which will include filling station.

* * *

Comanche, Tex.—Pierce Petroleum Corp., St. Louis, is building filling station here.

* * *

West Union, Ia.—A. W. Housladen and Fred Ganske will build filling station.

* * *

Maysville, Mo.—Standard Oil Co. of Indiana is seeking site for filling station.

* * *

Topeka, Kan.—Marland Refining Co. will build two service stations here.

* * *

Mooreland, Okla.—C. L. Lambert and Jim Ingles will build service station.

* * *

Okemah, Okla.—W. P. Woods Auto Supply Co. will erect filling station.

* * *

Juniata, Neb.—Farmers Co-Operative Oil Co. plan to build filling station.

* * *

Dacoma, Okla.—Everett Bruner is building filling station and garage.

* * *

Lincoln, Neb.—W. Christopherson, S. 33rd St., will build filling station.

* * *

Kearney, Neb.—Shaffer Oil & Refining Co. will build service station.

* * *

Sturgeon Bay, Wis.—P. M. Peterson Oil Co. will build filling station.

* * *

Hardy, Neb.—Hill Oil Co. is building service station at Ruskin, Neb.

* * *

Siloam Springs, Ark.—Continental Oil Co. will build service station.

* * *

Pine Bluff, Ark.—Claud Clegg will build $15,000 filling station.

* * *

East Dubuque, Ia.—Cuba City Oil Co. will erect service station.

* * *

Toledo, O.—Standard Oil Co. of Ohio will erect service station.

* * *

Burlington, Ia.—Blakeway & Beck building filling station.

* * *

Bucklin, Kan.—Bucklin Oil Co. to build service station.

* * *

Dover, O.—Dr. L. A. Burkey will build service station.

* * *

Edina, Mo.—East Side Garage will build filling station.

* * *

Granger, Tex.—J. L. Ivey will build filling station.

STANDARD OIL CO. OF N.Y.
SOCONY
SO
SOCONY
MOTOR
Out where traffic, from blocks away, will be attracted
To draw more patronage from passing traffic locate your advertising within its line of vision. Project it out and up where the eyes of motorists must see and read "gas" all the way, several blocks distant in either direction.
See how well such requirements are satisfied by Flexlumes—by day, milk-white glass letters clearly read way up and down the street; by night, the same solidly aglow with electric light.
Can you afford to be without this very resultful yet economical advertising? Write, without obligation, for a sketch and full information about Flexlume electric displays to fit your particular needs.
Also exposed lamp and other electric signs for those who prefer or require them.
FLEXLUME CORPORATION
1120-A Military Road Buffalo, N. Y.
Phone "Flexlume"
FLEXLUME CORPORATION
All Principal Cities
Factories also at Detroit, Los Angeles, Oakland and Toronto

FLEXLUME ELECTRIC DISPLAYS

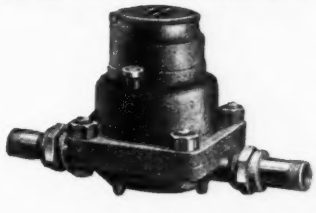
COUPON BOOKS

Accuracy is the most important consideration when buying Coupon Books. Inaccurate books are costly at any price. Allison Coupon Books are guaranteed to be absolutely accurate. *May we send you samples?*

Allison Coupon Company

Indianapolis, Ind.

RELIABILITY COMES FIRST



Year after year, users of Niagara Oil or Gasoline Meters depend on them for reliable measurement of petroleum products in any quantity. Their accuracy is constant---the meters are simple and trouble proof---installation is easy. Write us for catalog.

NIAGARA OIL METERS

Built Since 1892 By

BUFFALO METER COMPANY

2889 Main Street :-: :-: Buffalo, N. Y.

The Biggest "Profit-Maker" for Your Business Today!

Get in on this Wonderful Opportunity now! Buy a Globe Simplex High-Pressure Car Washer. Put it to work on a production basis. Watch your "wash" profits go up.

Specialize in the auto laundry field. Others are making enormous profits with "Globes."

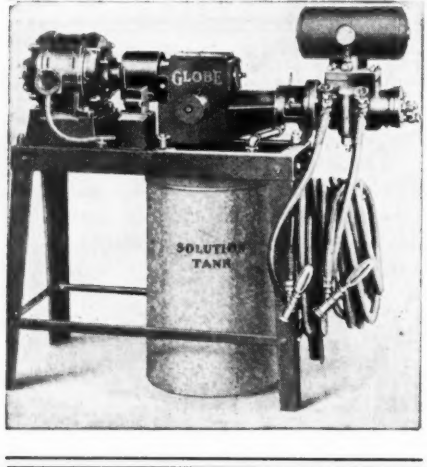
Efficiency? Yes! For "Globes" are dependable, simple in operation, and with all parts accessible. Economy? Again — Yes! For a "Globe" does the work of 3 or 4 men, and does it better. The "Globe" has a two car capacity—two operators using it simultaneously. Repeat business? Certainly! For "Globes" guarantee a quicker, better wash, because they are engineered for fast, easy, productive service.

Efficiency, Economy, and Repeat Business — these spell "PROFIT."

Write for prices and descriptive literature. Start making real money, and more of it.

GLOBE MANUFACTURING CO.
56-66 Grant St.,
Battle Creek, Mich.

Canadian Sales Agent: Donald Dixon & Co., Canada, 21 King St., East, Toronto, Ont., Canada



New Equipment to Improve Plants

Personal Notes of the Manufacturers

National Petroleum News

Correct Measure Co., Rochester, Pa., claims some original features in its latest gasoline pumps. These pumps have a series of vertical outlet tubes, five in the five-gallon model and 10 in the 10-gallon model which are calibrated before the pump leaves the factory. Discharge is effected by setting the operating handle to say 7 gallons. The gasoline then levels off tothe top of the outlet tube.

The installation of this pump is easy. The built-in cross level enables unskilled labor to level and erect the pump, and once properly leveled its accuracy is assured, owing to the calibration of the outlet openings. Numerals are set at three points inside the glass, and are plainly visible from all angles.

A 1¾" sight glass acts in the capacity of a flow teller, enabling the customer to see whether gasoline is flowing out of the pump to his car. In addition to hand models, Correct Measure pumps are made with combination hand and electric pumps in both 5 and 10 gallon types. All models carry the Underwriters' label.

* * *

Search for a new name trade-mark for Lee C. Moore & Co., Pittsburgh and Tulsa, manufacturer of tubular steel derricks, has resulted in the development of a trade-mark which symbolizes rig construction, tying up the name with the product.

Describing the new trade-mark, Ernest T. Giles, of Ketchum, MacLeod & Grove, Inc., advertising agency of Pittsburgh which designed the mark, says:

"Obviously, one of the tall peaks of the 'M' symbolizes a Moore derrick. The first letter 'O' corresponds to the calf wheel, as it is located in the rig; the second 'O' corresponds to the band wheel; the 'E' at the end is the general form of an 'O' and corresponds to a small wheel which shows up very clearly on a cross section view of the Moore rig."

* * *

An innovation in the globe frames, which are usually fitted with glass discs and used at filling stations and garages for illuminated advertising displays is found in the new product of the Bellaire Glass Co., Bellaire, O. This company is manufacturing a vitreous enameled frame which means that the frame has a porcelain finish, the same as is found in ordinary kitchen utensils.

The frame consists of a pressed steel shell which is dipped in vitreous enamel and fired under intense heat.

This company also manufactures all glass globes, crystal discs for frames and pressed glass discs for frames.

A new company known as the Bailey Meter Co., on April 1 will acquire the flow meter business and patents of the General Electric Co. and the fluid meter and combustion control business and patents of the present Bailey Meter Co. of Cleveland. O. E. G. Bailey, president of the present Bailey Meter Co. will be president of the new company, R. S. Coffin, vice president of the present Bailey Meter Co. will be vice president in charge of finances and administration. R. E. Woolley, now connected with the General Electric Co. will be vice president in charge of engineering and sales. Headquarters of the new company will be in Cleveland. The company will manufacture and market a complete line of flow meters, boiler room instruments and combustion control equipment. Announcement of the change is made by the General Electric Co.

* * *

L. F. Hukill, president of the Southern Gasoline Pump Works, 317 Winkler Ave., Louisville, Ky., announces the purchase of all the patents, drawings and stock of the old Beacon Products Co., of Louisville, which for some time has been manufacturing a 10-gallon dispensing unit under the name of the "Beacon Visible."

Mr. Hukill announces that this model will be continued and others added. The "Beacon Visible" is a 10-gallon pump with continuous flow, dispensing 10 gallons in 15 seconds. The pump has an automatic drain valve that operates when door of housing is closed, and is fitted with a quick action discharge valve.

* * *

Crouse-Hinds Co., Syracuse, N. Y., announces Obround Condulets said to include many time-saving features based on a new method of fastening covers and wiring devices to a condulet, known as the wedge-nut fastener. The cover or wiring device is put on, it is said, by a few turns with a screw driver and cannot be loosened by vibration. The new condulets are made in types to suit all purposes, it is said.

* * *

Barnstead Still and Serilizer Co., Boston, has put out an illustrated booklet describing its line of water stills and serilizers. These are used in laboratory work and elsewhere a supply of pure distilled water is required.

* * *

Merco-Nordstrom Valve Co. is building a factory in Oakland, Cal., to be devoted to the manufacture of plug valves for use in the oil and gas industries, according to announcement by H. S. Shuey, secretary-treasurer of the company. These valves have been man-

ufactured on the Atlantic seaboard but the officers of the company have decided that increase in business justifies the construction of a plant on the Pacific coast as well.

* * *

George D. Ellis & Sons Co., Inc., Philadelphia, is just putting on the market the Super-Service all steel welded lubricating oil can for the side rack of tank trucks. This is an addition to the Ellisco line of tank truck equipment. The new can is strongly reinforced, has a smooth inside finish and is tinned after assembly. Catalog describing the company's line will soon be ready for distribution, it is announced. Meanwhile, a leaflet is being sent to the trade describing the new five-gallon can.

* * *

Pyle-National Co., Chicago, has developed a new floodlight lens, known as a 45-degree circular divergence lens, which, it is said, effects a uniform distribution of light over broad areas which is required in refinery and oil field lighting. The lens is of optical glass, 23 inches in diameter, and is suitable for the largest Pyle-National projectors as well as smaller units.

* * *

Young Engine Corp., Canton, O., announces the appointment of H. A. Laurence of Dallas, Texas, to represent it in the Mid-Continent field. The company manufactures drilling engines, boosters and power units of various types.

Advertises Navy Gasoline

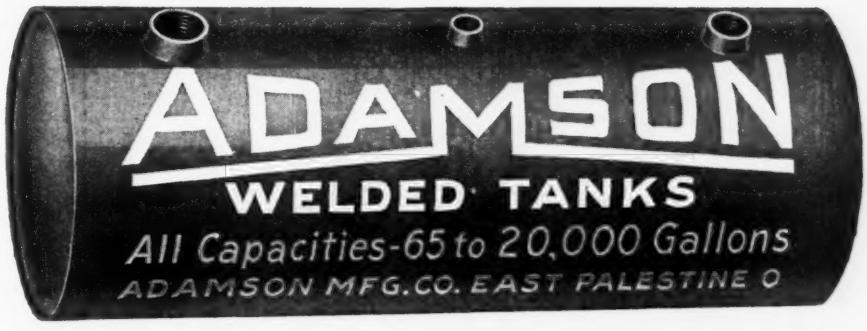
BIG RAPIDS, MICH.—Advertisements are used by the Big Rapids Oil Co. here to tell the public about the U. S. New Navy Gasoline it is marketing at its service station, saying that "U. S. Government experts make the specifications which the Big Rapids Oil Co. guarantee to fulfill."

The company claims the gasoline cures carbon knocks, increases mileage, power and compression and gives smooth motor action. The company also distributes other grades of oils and solicits farm trade by asking farmers to bring in their containers for re-filling.

A tourist camp is conducted along with the station, which is equipped with rest rooms and bath room. As a special feature, it sends free upon request a catalog on the Ferris Institute, located in Big Rapids. M. E. Curtis is proprietor of the company.

Auto Production Increases

CLEVELAND, March 31.—Automobile production in the United States in February totaled 298,359 passenger cars and trucks, including busses, ambulances and other large motor driven vehicles. January total production was 234,142 passenger car and trucks. Production in the United States in February, 1926, was 357,470 vehicles and in February, 1925, 275,965 vehicles. United States output in February consisted of 260,330 passenger cars and 38,029 trucks. The figures are from the Department of Commerce.



GULF Refining Company

General Sales Offices
PITTSBURGH, PA.
District Sales Offices
New York, Houston, Atlanta, Boston, New Orleans, Tampa, Philadelphia

REFINERS OF OKLAHOMA TEXAS AND LOUISIANA

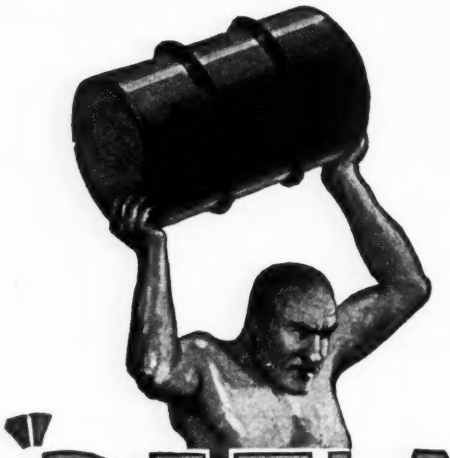
PETROLEUM

REFINED OIL
GASOLINE
NAPHTHA
GAS OILS
PARAFFINE WAX
ASPHALT

Fuel Oil--Lubricating Oils

CYLINDER ENGINE
CORDAGE

RED AND PALE PARAFFINE OILS



"DEFIANCE"

—because the men in back of the Defiance Steel Barrel have pledged themselves to make the best barrel that it is possible to build.

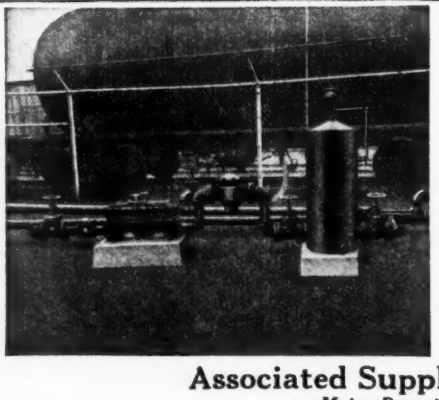
—because there is a type of Defiance Steel Barrel to fit your every need.

—because you can get Defiance Steel Barrels when you want them, due to adequate production and storage facilities.

—because you always get your money's worth in a Defiance Steel Barrel.

Give them a trial and you will always use Defiance Steel Barrels.

The American Steel Package Co.
Defiance, Ohio



GRANBERG PETROLEUM METERS
give precise measurements of
Petroleum Products

Use them to check your TANK CAR receipts and you will be sure of the amount your station should be charged with.

Our Engineering Department is at your service.

Send For Our Literature

Associated Supply Company
Meter Department
79 New Montgomery St. **San Francisco, Calif.**

New Patents

Refining

Apparatus for Treating Petroleum Oil—Hiram J. Halle, New York, N. Y., assignor to Universal Oil Products Co., Chicago, Ill. Filed Sept. 1, 1920. No. 1,619,929.

Process and Apparatus for Treating Oils.—Lyman C. Huff, Chicago, Ill., assignor to Universal Oil Products Co., Chicago, Ill. Filed July 3, 1924. No. 1,619,977.

Process of Converting Oils and Apparatus therefore.—John Collins Clancy, Asbury Park, N. J. Filed Apr. 16, 1924. No. 1,620,075.

Process of and Apparatus for Refining Petroleum.—Frank A. Milliff and John A. Milliff, Los Angeles, Calif. Filed Jan. 11, 1926. No. 1,620,163.

Distilling Apparatus.—Walter E. Brown, Kansas City, Mo., assignor to United Iron Works, Inc., Kansas City, Mo. Filed Aug. 6, 1924. No. 1,620,593.

Controlling Apparatus.—Frank J. Bast, New York, N. Y., assignor to Charles J. Tagliabue Mfg. Co., Brooklyn, N. Y. Filed Mar. 1, 1924. No. 1,621,620.

Production

Apparatus for Treating Crude Oils.—Harry A. Hopkins, Taft, Calif. Filed Feb. 16, 1925. No. 1,621,782.

Rotary-Drill Bit.—Lester C. Black, Los Angeles, Calif. Filed June 18, 1923. No. 1,621,921.

Casing Puller.—William N. Moore, Abilene, Tex. Filed July 30, 1926. No. 1,621,947.

Quick-Connecting Sucker Rod.—Harold L. Sullins, Taft, Calif., assignor of one-fourth to Wilburn D. Gray, Taft, Calif. Filed Jan. 15, 1926. No. 1,622,064.

Derrick or Tower.—James W. Brown, Tulsa, Okla. Filed May 5, 1925. No. 1,622,086.

Multiple Sucker-Rod Socket.—Walter A. O'Bannon, Tulsa, Okla. Filed Nov. 13. 1925. No. 1,620,382.

Sucker-Rod Socket.—Walter A. O'Bannon, Tulsa, Okla. Filed Dec. 4, 1925. No. 1,620,383.

Liner for Oil Wells.—John Tweeddale, Torrance, Calif. Filed July 30, 1925. No. 1,620,412.

Multiple Sucker-Rod Socket.—Walter A. O'Bannon, Tulsa, Okla. Filed Apr. 21, 1926. No. 1,620,486.

Natural Gasoline

Process of Recovering Condensable Vapors from Gases.—Harry H. Armstrong, Los Angeles, Calif. Filed July 11, 1923. No. 1,621,821.

Apparatus for Cooling and Condensation.—Vernon C. Canter, Charleston, W. Va., assignor to Gasoline Recovery Corp. Filed May 2, 1924. No. 1,622,024.

Means for Gas Separation.—Horace Dumars, New Suffolk, and William Spencer Bowen, New York, N. Y., assignors to Bowen-Dumars Power Corp., New York, N. Y. Filed Nov. 28, 1923. No. 1,622,134.

Miscellaneous

Lock Valve for Gasoline Motor Supply Tanks.—John R. Bingaman, West Reading, Pa. Filed May 15, 1926. No. 1,621,486.

Method of Producing Gas.—Oresters U. Bean, New York, N. Y., assignor to Bean Process Syndicate, Inc. Filed Mar. 24, 1925. No. 1,621,652.

Water-Cooled Oil Separator.—Robert L. Alexander and Harold W. Wishart, Clinton, Iowa, assignors to Climax Engineering Co., Clinton, Iowa. Filed May 29, 1926. No. 1,621,707.

Process of Making Organic Lead Compounds.—Thomas Midgley, Jr., Dayton, Ohio, assignor to General Motors Corp., Detroit, Mich. Filed May 19, 1923. No. 1,622,228.

Valve.—Lyman C. Huff, Chicago, Ill., assignor to Universal Oil Products Co., Chicago, Ill. Filed June 15, 1925. No. 1,619,937.

Lubricating Oil.—Joseph F. Anderson, Kansas City, Kans. Filed Aug. 13, 1923. No. 1,619,964.

Tank Car.—Edward A. Fall, Rutherford, N. J. Filed June 27, 1923. No. 1,620,453.

Heating Hood for Tank-Car Outlets.—Edward A. Fall, Rutherford, N. J. Filed Aug. 2, 1922. No. 1,620,452.

R. C. Holmes Is Member Of Fire Committee

CLEVELAND, March 31.—R. C. Holmes, president of The Texas Co., is a member of an advisory committee made up of representative industrial and business leaders, who are engaged in a concerted attack against the national fire menace under the auspices of the National Fire Protection Association.

Irving T. Bush, president of the Bush Terminal Co., New York, is national chairman of a committee of business men which is raising a fund of $500,000 with which to finance the fight on fire. With the fund proposed to be raised, 10 skilled fire prevention engineers will work for the next five years wherever local loss records indicate that fire conditions should be remedied.

The National Fire Protection Association during the past two years has had two fire prevention engineers at work. They have carried the campaign into 80 localities, with such success, Mr. Bush says, that with 10 engineers on 25 to 50 per cent during the next five the job, getting cities to protect themselves fire losses can be cut down from years.

O. D. Robinson Buys Oil Marketing Business

CLEVELAND, March 31.—O. D. Robinson, formerly of the Transcontinental Oil Co. of Pittsburgh, has bought control of the General Gas & Oil Co. of Kingston, Pa., from W. L. and G. E. Jones, according to C. N. Rome, assistant treasurer of the company. C. I. Boop, also formerly with the Transcontinental, is associated with Mr. Robinson, being vice president and general manager of the General Gas & Oil Co.

The company, which was established about three years ago, has bulk and filling stations in Wilkes-Barre, Kingston Luzerne and West Nanticoke, in addition to a general wholesale business.

Cincinnati Oil Club Elects Officers

CINCINNATI, O., March 31.—At a meeting of the Cincinnati Oil Club recently, these officers were elected to serve for the ensuing year: E. V. Weber, Eureka Oil Co., Reading, Cincinnati, O., president; Frank J. Hall, Hall-Ratterman Oil Co., Cincinnati, O., vice president; Fred T. Boeschlin, Caldwell & Taylor, Inc., Cincinnati, O., secretary; and R. P. Hamilton, Refiners Oil Co., Cincinnati, O., treasurer.

Gordon Bros. Oil now Gordon Oil Co.

BOWERSTON, O.—On March 15 the name of the Gordon Bros. Oil Co., with headquarters here, was changed to Gordon Oil Co. No change in management nor policy was made, the name being changed merely to make it shorter, according to R. H. Gordon, head of the company.

Don't buy a Rotary Pump!

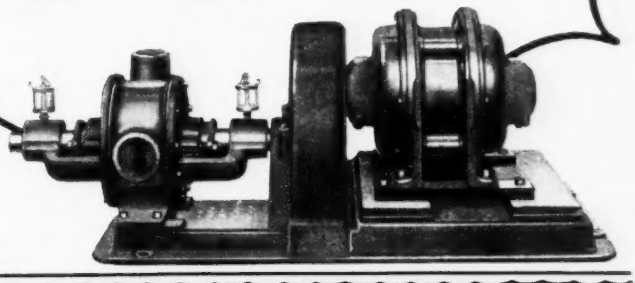
Until you have seen our Catalog of
CURTIS ROTARY PUMPS

The Pumps equipped with Timken Roller Bearings

You'll find in this Catalog a Curtis Rotary for Every Pumping Purpose. The one shown below was designed for the express purpose of pumping Gasoline and Oils—at the smallest possible cost—with no trouble or delays.

We've been building them for 18 years!

Pittsburgh Machine Tool Co.
Braddock Penna. U. S. A.



Drop us a Postal TODAY and we'll mail your Catalog TOMORROW!

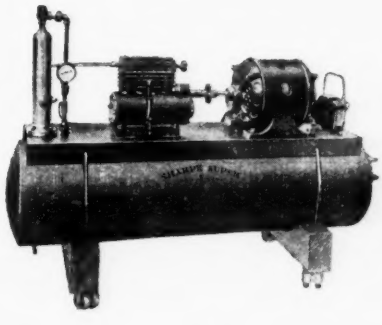
Help Your Salesmen

to acquire a working technical knowledge of the selection, application and use of lubricants, by ordering for each one a copy of the PRACTICE OF LUBRICATION, by T. C. Thomsen.

It discusses the origin, nature and testing of lubricants and every phase of lubrication engineering.

It is $6 a copy. Make your check payable to—

NATIONAL PETROLEUM NEWS
825 Caxton Building Cleveland, Ohio



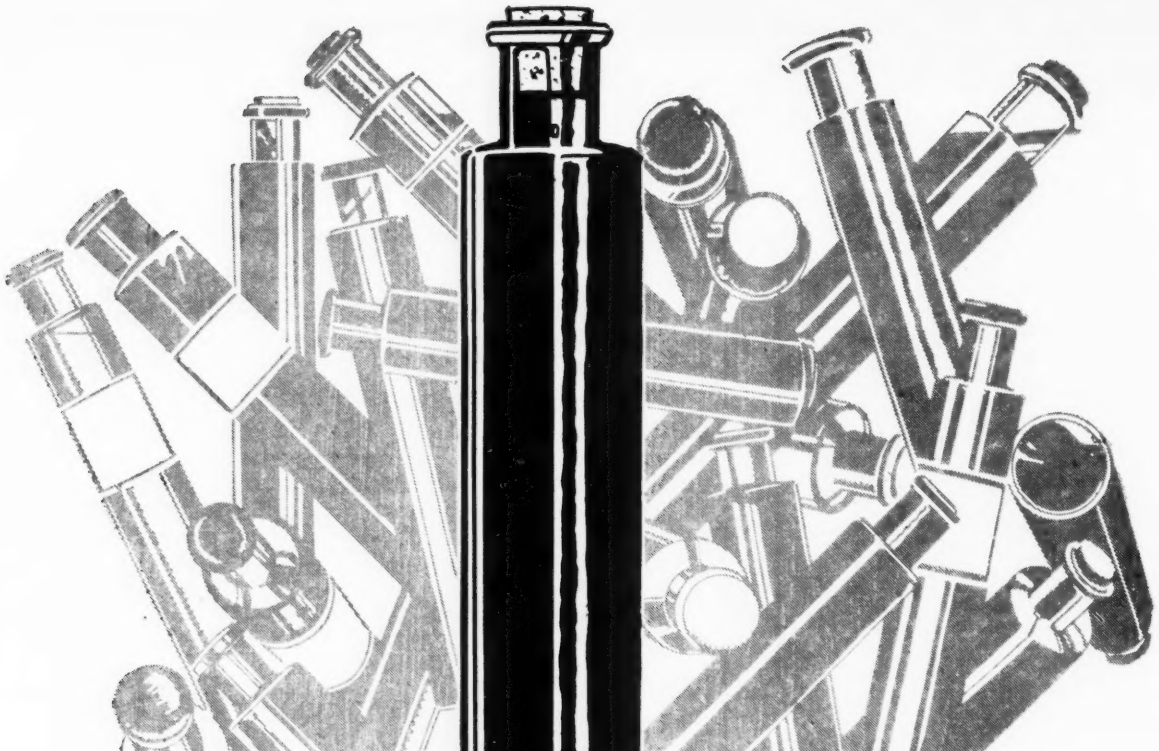
4 Cylinder
SHARPE SUPER-FOUR
AIR COMPRESSOR
DIRECT GEAR DRIVE

No Belts to Slip---
Less Vibration---
Reasonably Priced---
Units IDEAL For Gasoline Service Stations

Write Us for Distributors' Proposition

Manufactured By

The Sharpe Sales Co. 1354 S. Flower St., Los Angeles, Cal.



Out of the maelstrom of oils, stands INDEPENDENT BRIGHT STOCK

Built to definite specifications, from carefully selected Okmulgee Crude, Independent Bright Stock stands firmly established in the buyer's confidence as a product he can tie to.

These specifications prove the high quality of Independent Bright Stocks. They are religiously maintained. You may, therefore, buy Independent Bright Stocks with full confidence that they will grade out perfectly.

Ask for samples and quotations on your requirements.

SPECIFICATIONS

STANDARD "D"

Gravity	23-25
Flash	530-540
Fire	600-610
Cold	15-20
Viscosity @ 210	150-160
Carbon Residue	below 2%
Emulsion	O. K.
Color (In solution)	4-4½

CREAM OF THE CRUDE

Copyrighted 1927

INDEPENDENT OIL AND GAS COMPANY

PRODUCERS AND REFINERS

KENNEDY BUILDING

TULSA OKLA.

ON THE LAZY BENCH

National Petroleum News

Observations of Service Station Hand

The man who said "two heads are better than one," never had his wife in the back seat.

Many men can keep down their temper but can't keep down expense.

Tell me how a man drives and I'll tell you how he gets along with his wife.

It used to be the full dinner pail—nowadays it's the full gasoline tank.

By Joseph H. Perreault, Forest Glen Service Station, Canton, Miss.

◈ ◈ ◈

McIntosh had just returned from a trip to the old country.

"Ye promised us," said his youngest son, "that ye'd send us a postcard frae Edinburgh, faither, and ye didna do so."

"Aye," admitted McIntosh, "and it was ma ain fault, lad. I went and lost it."

—Union Oil Bulletin

◈ ◈ ◈

"Baptiste, will you go and meet my mother-in-law at the station? Here are five francs for you."

"But if she doesn't come?"

"You shall have 10."

—Barnsdall

United We Fall

The guards went grimly about the task of affixing the electrodes to the body of the doomed man in the chair. The kindly chaplain bent over him.

"Any last request, my poor mortal?" he inquired.

"Yes, Parson—it'll comfort me a lot if you just hold my hand."

– Barnsdall

◈ ◈ ◈

Parson—"And is that bottle of whiskey your sole consolation in your bereavement?"

Widower—"Oh, no, parson, there's a couple more in the cupboard."

—Union Oil Bulletin

◈ ◈ ◈

Adam was certainly a lucky person. He didn't have to listen to Eve crack that mossy one: "So's your old man!"

—Skelly News

◈ ◈ ◈

North: "Who writes the advertisements for the bank?"

West: "I don't know, but I'm sure it isn't the same man that makes the loans!"

—Barnsdall

◈ ◈ ◈

The fellow who indulges in hot air usually lacks steam.

—Union Oil Bulletin

All-in-One-Folio

$25.00

Folio opens out to full Display

361—This Folio is substantially made from heavy, smooth, 5-oz. black cowhide. No flaps—Solid ends. Opens out for full display. Contains eighteen 4-oz. bottles with metal capped corks. Bottles partitioned separately. Case also contains six 1-oz. squat grease jars. Plenty of room for literature and order blanks.

Less 10% for Cash

Other styles in our FREE Catalog

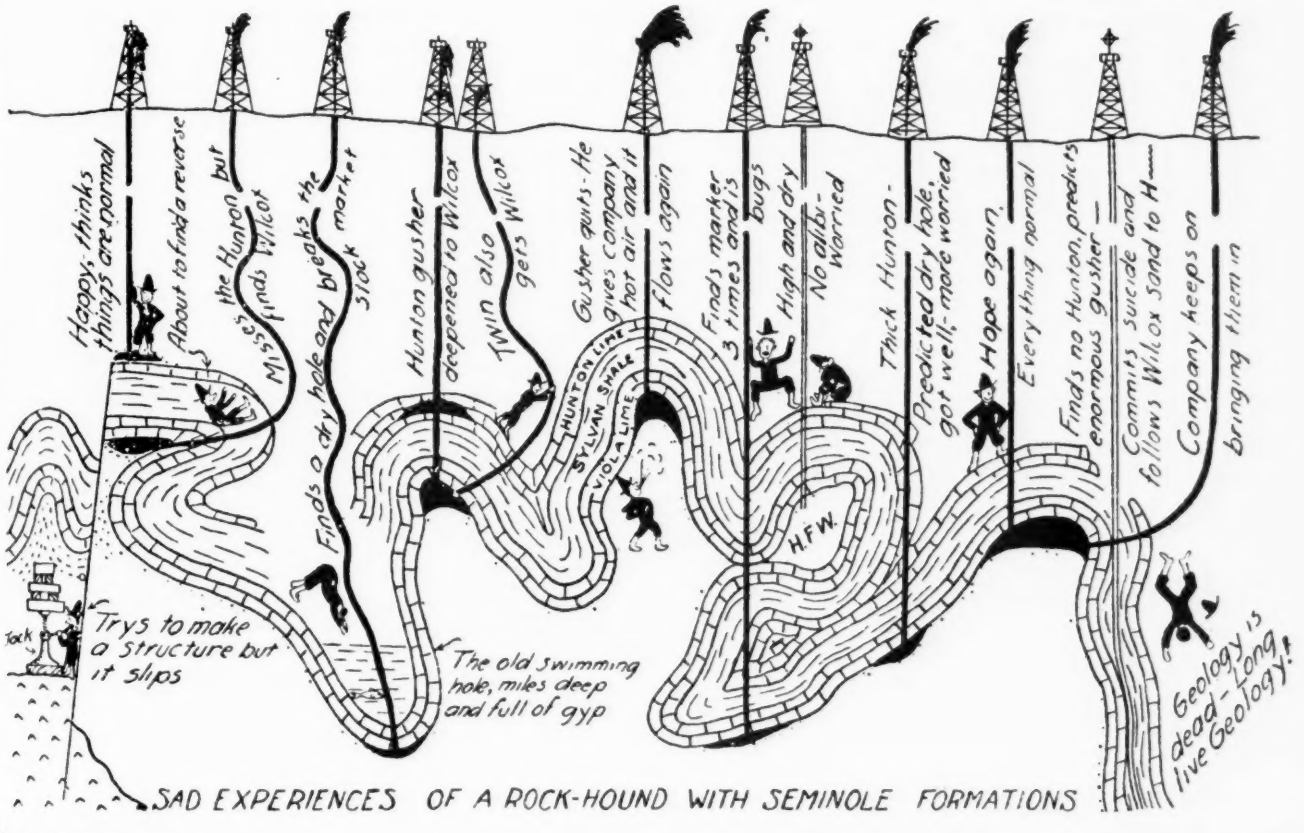
L-U-C-E

Builders of Sales Luggage

614 Delaware, KANSAS CITY, MO.

Our idea of preparation is the boy who took four years of journalism and then opened a newsstand.

—Union Oil Bulletin


Happy; thinks things are normal
About to find a reverse
Miss finds the Hunton but finds Wilcox
Finds a dry hole and breaks the stock market
Hunton gusher deepened to Wilcox
Twin also gets Wilcox
Gusher quits. He gives company hot air and it flows again
HUNTON LINE
SYLVAN SHALE
VIOLA LIME
Finds marker 3 times and is bugs
High and dry
No alibi- worried
HFW
Thick Hunton- Predicted dry hole, got well- more worried
Hope again
Every thing normal
Finds no Hunton, predicts enormous gusher —
Commits suicide and follows Wilcox send to H—
Company keeps on bringing them in
Trys to make a structure but it slips
The old swimming hole, miles deep and full of gyp
Geology is dead- Long live Geology!
SAD EXPERIENCES OF A ROCK-HOUND WITH SEMINOLE FORMATIONS

This Sign will tell motorists you sell correct lubrication

THIS sign *always* identifies the station along-the-highway where a motorist can buy *the Oil* which will give him correct lubrication.

The motorist is learning that where he sees this sign he gets the *right grade* of motor oil to seal the power in his engine at every degree of wear.

Only Opaline Motor Oil is recommended on the basis of engine-wear—*as indicated by the mileage on the speedometer!* And only Opaline Dealers have this sound method for increasing gallonage.

Sinclair supplies the Dealer with several grades of Opaline, and with the Sinclair Recommendation Index which tells when each grade should be sold. The authorized Opaline Dealer asks the motorist his mileage, the Index tells the grade—the motorist drives away with the kind of lubrication which brings him back for more!

May we tell you about this successful method of selling *correct lubrication* with the full line of Opaline Motor Oils?

SINCLAIR REFINING COMPANY, INC.

Also Makers of Sinclair Gasoline and H-C Gasoline

45 NASSAU STREET, NEW YORK

Atlanta Boston Chicago Houston Kansas City

Entire contents copyrighted 1927 by Sinclair Refining Company, Inc.

Refinery - Tank Wagon Markets

National Petroleum News

Gasoline Prices Fluctuate Slightly; Heavy Oils Are Seasonably Weaker

TULSA, April 2

WITH the exception of slight fluctuations in tank car prices for gasolines and a continuance of the recession in prices which heavy oils usually experience at this season, Mid-Continent refinery markets this week were comparatively featureless.

Reports that a further reduction in crude prices would be forthcoming this week end were circulating among the trade in Tulsa on Friday and Saturday but up to the close of business nothing had developed.

Several factors doubtless gave rise to the sentiment that prevailed. In the first place Standard Oil Co. of California announced a reduction in prices of all gasoline content crudes ranging from 1 cent per barrel on the heavier grades to $1.38 per barrel on the lighter crudes. This reduction on the west coast, it is believed in some quarters, will cause an increasingly large amount of gasoline to be shipped to the east coast which will doubtless work its way inland at least as far as it has in former years. Cheap California gasoline more than once has taken Detroit and surrounding points' business away from Mid-Continent refiners.

"OUR market will be narrowed considerably," says the executive of one large Oklahoma refinery, "unless prices for crude oil in the Mid-Continent are lowered, enabling us to compete with the lower gasoline prices which inevitably will be made to Ohio and Michigan distributors on California gasoline by the Atlantic coast trade.

"California gasoline doubtless would have played an important part in eastern markets at some time during the coming summer even without the reduction in crude prices made this week." He cited the Bureau of Mines figures for January, 1927, which show that at the end of January, California refiners had 12,684,000 barrels of gasoline in storage, a little more than one-fourth of all the gasoline in storage in the country.

"Crude oil in storage in California at that time totaled 118,988,000 barrels, as against 397,988,000 barrels for the entire country or approximately one-third of the crude oil in storage. Doubtless California refiners will have to find an outlet for what I consider the excess oil they now have in storage."

Seminole production hit a new peak this week when on March 27, a total of 336,064 barrels of oil were taken from the ground, which is the highest daily production ever recorded by any individual field in Oklahoma. With the Oklahoma Pipe Line Co.'s 30,000 barrel line from this field completed, and other outlets and storage nearing completion, it is generally felt that production will at least continue at its present pace for some time to come.

SPOT gasoline sales to jobbers recorded during the week ended today fell far below the total reported for the past two weeks. The market for 58-60 U. S. Motor gasoline in Oklahoma opened on Monday with a goodly number of small orders for this grade coming in, but toward the end of the week sales eased off considerably and on Friday the total number of cars reported to National Petroleum News was less than 50. Prices fluctuated slightly around 6½ to 6¾ cents for U. S. Motor and conditions surrounding this fluctuation are rather interesting.

Early in the week when movement was fairly good, the bulk of sales of U. S. Motor gasoline were being made at 6½ cents. Toward the end of the week, sales had narrowed down to the extent that refiners who had been holding their prices firm at 6¾ cents were moving equally as much goods as was being sold for 6½ cents. As a result, the market when fairly active was lower in price than when sales were slow.

Marketers in Tulsa reported they were able to beat Oklahoma prices slightly at north Texas refineries, but virtually all agreed that 6½ cents was the bottom representative market price on U. S. Motor gasoline in Oklahoma at any time during the week.

GASOLINE in north Texas presents a situation only slightly at variance with conditions prevailing in Group 3. Spot 58-60 U. S. Motor gasoline in this area held firm at 6½ cents most of the week. On Friday and Saturday one or two refiners had a little surplus of this grade which they were willing to sell at 6¼ cents. Considerable short selling was done in Wichita Falls on April gasoline. Prices are reported to have been 6 and 6⅛ cents on 58-60 U. S. Motor.

Exporters have been inactive this week, but the business done last week on higher gravity gasolines together with the exceptionally good domestic business which north Texas refiners experienced during the previous week has supplied them well with orders, and consequently no distress gasoline has appeared on the market during the last seven days.

One exporter in Tulsa Friday stated that his storage at New Orleans was full. Four cargoes are to move out around April 15, but until that time he doubted if he would be interested in making any purchases. Other exporters are showing no apparent interest in the present market.

NATURAL gasolines in both Oklahoma and north Texas have been fairly active over the week. Slight upward revisions have been made on prices of all grades. Grade C closed the week selling largely at 4 to 4⅛ cents per gallon in Oklahoma, and with this grade fairly scarce, demand for Grade BB has increased and is now bringing the same price as quoted on Grade B.

An inquiry for 50 cars of Grades BB and C was reported in the field Friday. Quotations on all grades of natural gasoline for deferred shipment are ranging from an eighth to a quarter of a cent higher than spot prices. An order for 35 cars of Grade BB for future shipment brought 4⅜ cents on Thursday of this week.

Burning oils have sold lower this week in all areas of the Mid-Continent. With the closing of several cracking plants, gas oil is available in more abundant quantities for immediate shipment. One large Oklahoma refiner who for at least a year has cracked his total supply of gas oil, is now offering it to industrial users.

Dark gas oil of 32-36 gravity is available in Oklahoma at 3 cents with straw color goods bringing from an eighth to a quarter cent more. In north Texas, prices are lower. Spot gas oil is available at 2⅞ cents per gallon and material for deferred shipment has sold at still lower prices, sale of a large quanti-

(*Continued on Page* 117)

NATURAL GASOLINE

A gasoline which fails to give proper results as a motor fuel is merely lacking in one or more of the vital fuel factors.

If it fails in quick starting and smooth, easy acceleration .... if it "knocks" ... if it does not come up to the highest motor fuel standards, try blending

NATURAL GASOLINE
in larger percentages

Lack of volatility is the most common fault of gasoline. Natural Gasoline is concentrated volatility, and when added to gasoline produces a motor fuel that will satisfy motoring requirements.

Many interesting facts regarding Natural Gasoline have been developed from the program of research conducted by this Association. The bulletins will be sent free upon application to Research Department, Association of Natural Gasoline Manufacturers, Cosden Bldg., Tulsa, Okla.

ASSOCIATION OF NATURAL GASOLINE MANUFACTURERS

RESEARCH DEPARTMENT ASSOCIATION OF NATURAL GASOLINE MANUFACTURERS

Refinery Markets on Light Oils and Lubricants

Pennsylvania, Oklahoma, Kansas, North and South Texas, Louisiana, Arkansas, California and New England

GASOLINE AND NAPHTHA

PENNSYLVANIA	Prices Apr. 4	Prices Mar. 28	Prices Mar. 21
52-54 Naphtha	10 -10¼	10 -10¼	10¼-10½
54-56 Naphtha	10 -10¼	10 -10¼	10¼-10¾
58-60 Gasoline	9 - 9½	9¾- 9½	9½-10¼
60-62 Straight-run gasoline	10 -10½	10 -10¼	10 -10¾
64-66 Straight-run gasoline	11½-12	11¾-12	11¾-12½
68-70 Straight-run gas. 350-360 E.P.	12 -12¼	12 -12¼	12½-13
68-70 Straight-run gas. 305-320 E.P.	18 -19	18 -19	17 -19
OKLAHOMA			
48-50 450 E. P. napntha	- 6½	- 6½	6½- 6¾
50-52 450 E. P. naphtha	- 6½	- 6½	6½- 6¾
56-58 450 E. P. gasoline	-†6¼	†- 6¾	†- 6¼
56-58 U. S. Motor gasoline	-†6¼	†6¾- 6⅜	†6¾- 6⅜
58-60 450 E. P. gasoline	-†6¼	†- 6¼	†- 6¼
58-60 U. S. Motor 437 E. P.	6½- 6¾	6½- 6¾	6¼- 6⅝
60-62 437 E. P. gasoline	6½- 6¾	6½- 6¾	6½- 7¾
60-62 400 E. P. gasoline	6¾- 7	- 7	- 7
64-66 390 E. P. gasoline	7⅛- 7¼	7¼- 7½	7 - 7¼
64-66 375 E. P. gasoline	7¼- 7½	7½- 7¾	- 7½
68-70 350-360 E. P. gasoline	- 8	8¼- 8½	- 8¼

†Prices Nominal.

KANSAS*			
58-60 U. S. Motor gasoline	7 - 7¼	7 - 7¼	6¾- 7
60-62 400 E. P. gasoline	- 7½	7½- 7¾	7½- 7¾
64-66 375 E. P. gasoline	- 8	8 - 8¼	8 - 8¼

*F. O. B. refinery Kansas destination.

NORTH TEXAS			
48-50 450 E. P. naphtha	- 6½	- 6½	- 6½
56-58 450 E. P. gasoline	†- 6	-†6	†- 6
58-60 450 E. P. gasoline	†6 - 6⅛	†6 - 6⅛	†6 - 6⅛
56-58 U. S. Motor gasoline	†6 - 6¼	†6 - 6¼	†6 - 6¼
58-60 U. S. Motor gasoline	6¼- 6½	6½- 6⅝	6 - 6¼
64-66 390 E. P. gasoline	- 7	- 7	†- 7
64-66 375 E. P. gasoline	7¼- 7¼	7¼- 7½	†7¼- 7½
68-70 350-360 E. P. gasoline	7¾- 8	8 - 8¼	8 - 8¼

†Prices nominal.

NORTH LOUISIANA			
58-60 U. S. Motor 437 E. P.	6½- 6¾	6¾- 7	6½- 6¾

ARKANSAS			
56-58 450 E. P. gasoline	- 6½	- 6½	- 6½
58-60 450 E. P. gasoline	- 6¾	- 6¾	- 6¾
58-60 U. S. Motor gasoline	- 7	7 - 7¼	6¾- 7

CALIFORNIA			
*54-58 U. S. Motor 437 E. P.	8½- 9	9 - 9½	9 - 9½
*58-61 U. S. Motor, 437 E. P.	9½-10	10 -10½	10 -10½
*42-45 Engine distillate 445-480 E.P.	5 - 5½	7 - 7½	7 - 7½

*2c tax to be added if used in state.

NEW ENGLAND (F. O. B. Boston and Fall River)			
58-60 U. S. Motor gasoline	-10½	-10⅝	-11⅜

NATURAL GASOLINE

(Note: End point of all grades, not over 375° F.)

OKLAHOMA			
Grade AA, 80-87.9, 90% Recovery	- 4½	- 4½	- 4½
Grade A, 72-79.9, 90% Recovery	- 5	4¾- 5	- 5
Grade BB, 84-92, 85% Recovery	- 4¼	- 4	- 4
Grade B, 76-83.9, 85% Recovery	-†4¼	4 - 4¼	- 4¼
Grade C, 80-90, 78% Recovery	- 4	3¾- 3⅞	- 3¾

NORTH LOUISIANA			
*Grade AA	5 - 5¾	5 - 5¾	- 5
*Grade BB	- 4¾	4½- 4¾	- 4½
*Grade C	4½- 4¾	4¼- 4½	- 4¼

*F. O. B. Monroe District.

NORTH TEXAS			
*Grade AA, 80-87.9, 90% Recovery	- 4½	- 4½	- 4½
*Grade A, 72-79.9, 90% Recovery	- 5	4¾- 5	- 5
*Grade BB, 84-92, 85% Recovery	- 4¼	- 4	3⅞- 4
*Grade B, 76-83.9, 85% Recovery	-†4¼	4 - 4¼	- 4¼
*Grade C, 80-90, 78% Recovery	†4 - 4⅛	†3⅞- 4	†3¾- 3⅞

*F. O. B. Breckenridge.
†Prices nominal, no sales being recorded on this date.

CALIFORNIA			
75-85, 375-390 E. P. blend	7½- 8½	10 -12	10 -12

MOTOR FUEL BLENDS

PENNSYLVANIA			
68-70 Grav. 437 E. P. blend	10½-11	10¾-11¼	11 -11¼
64-66 Grav. 437 E. P. blend	10¼-10½	10½-11	11 -11¼
60-62 Grav. 437 E. P. blend	10 -10½	10¼-11	11 -11¼
68-70 Grav. 420 E. P. blend	.....	.....	.....

OKLAHOMA			
64-66 437 E. P. blend	- 6⅜	6¼- 6½	6¼- 6½

BURNING OILS

PENNSYLVANIA			
45 Water White Kerosene	7 - 7¼	6¾- 7	7 - 7¼
46 Water White Kerosene	7¼- 7½	7¼- 7½	7½- 7¾
47 Water White Kerosene	8 - 8½	- 8	8 - 8¼

OKLAHOMA			
41-43 Water White Kerosene	4⅝- 4⅞	4¾- 5	4¾- 5
42-44 Water White Kerosene	5 - 5¼	5¼- 5½	5¾- 5½

KANSAS			
41-43 w. w. kerosene	5½- 5¾	5¾- 6	5¾- 6
42-44 w. w. kerosene	6 - 6¼	6 - 6½	6¾- 7

NORTH TEXAS			
40-42 Water White Kerosene	- 4¼	-†4½	-†4½
41-43 Water White Kerosene	4⅜- 4⅝	4⅝- 4⅞	4½- 4¾

†Prices nominal.

NORTH LOUISIANA			
41-43 Water White Kerosene	5 - 5⅜	5 - 5½	5½- 5¾

ARKANSAS	Prices Apr. 4	Prices Mar. 28	Prices Mar. 21
41-43 Kerosene	5¼- 5½	5¼- 5¾	5½- 5¾

CALIFORNIA			
38-40 Water White Kerosene	6 - 6½	6 - 6½	6 - 6½

NEW ENGLAND			
**40-43 Water White Kerosene	- 7¾	- 8	- 8

NEUTRAL OIL

PENNSYLVANIA (Viscosity at 70° F.)			
200 Vis. No. 3 Assoc. Filt.	32 -32½	32 -32½	32 -32½
180 Vis. No. 3 Assoc. Filt.	30 -30½	30 -30½	30 -30½
150 Vis. No. 3 Assoc. Filt.	27½-28	27½-28	27¼-28

(Non-Viscous)			
34 Grav. 330-340 Flash	7¾- 8¼	7¾- 8¼	8 - 8½
36 Miners Neutrals 300-305 Flash	7¼- 7½	7¼- 7½	7½- 7¾

OKLAHOMA (Viscosity at 100° F.)			
100 Vis. No. 2 color	6 - 6½	6 - 6½	5 - 6½
150 Vis. No. 3 color	- 8½	- 8¼	- 8½
150 Vis. No. 4 color	8 - 8¼	8 - 8¼	8 - 8¼
180 Vis. No. 3 color	9½-10½	9½ 10½	10 -10½
180 Vis. No. 4 color	- 9¾	- 9¾	- 9¾
180 Vis. No. 5 color	9¾- 9½	9¾- 9½	9¾- 9½
200 Vis. No. 3 color	10½-11	10½-11	10⅝-11
200 Vis. No. 4 color	10½-10¾	10½-10¾	10¼-10¾
200 Vis. No. 5 color	9 -10½	9 -10½	9½-10½
220 Vis. No. 3 color	12½-13½	12¼-13¼	12½-13½
220 Vis. No. 4 color	12¾-12¾	12¾-12¾	12¾-12¾
220 Vis. No. 5 color	11½-12	11¾-12	11⅝-12
240 Vis. No. 3 color	14 -14½	14 -14½	14 -14½
240 Vis. No. 4 color	-13½	-13½	-13½
240 Vis. No. 5 color	12 -13	12 -13	12 -13
280 Vis. No. 3 color	16 -17	16 -17	16 -17
280 Vis. No. 4 color	-15¾	-15¼	-15¼
280 Vis. No. 5 color	14½-15	14½-15	14½-15
300 Vis. No. 5-6 color	-17	-17	-17

GULF COASTAL (Viscosity at 100° F; pour test 0)			
100 Vis. No. 2 Color Unfilt. Pale	7½- 8½	7½- 8½	7½- 8½
200 Vis. No. 3 Color Unfilt. Pale	10½-11½	10½-11½	10½-11½
300 Vis. No. 3 Color Unfilt. Pale	11½-12½	11½-12½	11½-12½
500 Vis. No. 3½ Color Unfilt. Pale	13½ 14½	13½-14½	13½-14½
750 Vis. No. 4 Color Unfilt. Pale	16 -16½	16 -16½	16 -16½
200 Vis. No. 5½ Color Red Oil	8½- 9½	8½- 9¾	8½- 9½
300 Vis. No. 5½ Color Red Oil	10 -11	10 -11	10 -11
500 Vis. No. 6 Color Red Oil	11½-12½	11½-12½	11½-12½
750 Vis. No. 6 Color Red Oil	14½-15½	14½-15½	14½-15½

CALIFORNIA (Viscosity at 100° F.)			
100 Vis. No. 2 color	9 - 9½	9 - 9½	9 - 9½
100 Vis. No. 3 color	7½- 8	7½- 8	7½- 8
200 Vis. No. 3 color	9½-10	9½-10	9½-10
300 Vis. No. 3 color	10½-11	10½-11	10½-11
450 Vis. No. 3-3½ color	13 -13½	13 -13½	13 -13½
550 Vis. No. 3-3½ color	14½-15	14½-15	14½-15
600 Vis. No. 3-3½ color	15 -15½	15 -15½	15 -15½
100 Vis. No. 5 color	6½- 7	6½- 7	6½- 7
200 Vis. No. 5 color	8½- 9	8½- 9	8¾- 9
300 Vis. No. 5 color	9 - 9½	9 - 9½	9 - 9½
400 Vis. No. 6 color	11 -11½	11 -11½	11 -11½
500 Vis. No. 6 color	11½-12	11½-12	11½-12
600 Vis. No. 6 color	12 -12½	12 -12½	12 -12⅝
700 Vis. No. 7 color	14½-15	14½-15	14½-15

CYLINDER STOCKS

OKLAHOMA			
190-200 Vis. at 210° Bright Stock	30 -32	30 -32	30 -32
150 160 Vis. at 210° Bright Stock	27 -28	26 -28	26 -28
600 E Stock 140-150 Vis.—210°	-18	-18	-18
600 Steam Refined Olive Green	8 -10	8 -10	8 -10
600 Steam Refined Dark Green	5 - 6	5 - 6	5 - 6
Black Oil	4 - 5	4 - 5	4 - 5

PENNSYLVANIA (1-inch Immersion Test)			
600 Steam Refined	11 -11½	11 -11½	11 -12
650 Steam Refined	14 -15	14 -15	14 -15
600 Flash	18 -20	18 -20	18 -20
625 Flash	29 -30	29 -30	29 -30
600 Warren E	20 -21	20 -21	19½-20
600 Oil City E	18½-19	18½-19	18 -18½
600 D Filtered	25 -25½	25 -25½	24½-25½
Cold Test Stocks (bright filtered)	35 -36	35 -37½	35½-37½
Cold Test Stock (dark filtered)	33 -34	33 -35	33 -35

(Note—Prices of total immersion test goods average 1 to 3 cents per gallon higher.)

LONG RESIDUUM STOCKS

PENNSYLVANIA			
60-65 vis. @ 210, 440-450 flash No. 5½ color	33 -34	33 -34	-34
70-75 vis. @ 210, 450-455 flash No. 6 color	34 -35	34 -35	34 -35
80-85 vis. @ 210, 440-450 flash No. 7 color	-36	-36	-36
80-85 vis. @ 210, 450-460 flash No. 7-8 color	35 -37	35 -37	36 -37
80-85 vis. @ 210, 460-465 flash No. 7 color	36 -38	36 -38	37 -38
95-100 vis. @ 210, 490-495 flash No. 8 color	-39	-39	-39

**Only one refiner quoting.

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Other Equipment____
Name____ Address____

Refinery Markets on Wax and Heavy Oil Products

Pennsylvania, Oklahoma, Kansas, North and South Texas, Louisiana, Arkansas, California, and New England

WAX

*PENNSYLVANIA	Prices Apr.4	Prices Mar. 28	Prices Mar. 21
122-124 White Crude Scale.	3⅛- 3½	- 3½	- 3⅝
124-126 White Crude Scale.	- 3½	3⅜- 3⅝	- 3¾
OKLAHOMA			
124-126 White Crude Scale.	-†3½	3⅜-3¾	3½- 3¾
†Represents quotations only.			
CALIFORNIA			
White Crude Scale.....	6 - 7	6 - 7	6 - 7
*Per Pound, New York			

FUEL OIL

PENNSYLVANIA			
36-40 Fuel Oil.....	5¾- 6	5¾- 6¼	6 - 6⅛
30-34 Fuel Oil.....	- 5¾	- 5¾	- 5¾
28-30 Fuel Oil.....	- 5¾	- 5¾	- 5¾
OKLAHOMA			
38-40 Straw distillate.....	3¼- 3½	3½- 3¾	3¾- 4
36-38 Straw distillate.....	- 3½	- 3½	- 3¾
32-36 Gas oil straw (Gal.)..	†3⅛- 3¼	-†3½	†3¾- 4
32-36 dark Gas oil (Gal.)..	- 3	3⅛- 3¼	3½- 3¾
28-30 Fuel oil (Bbl.).....	1.25 -1.35	1.27½-1.35	1.35 -1.40
26-28 (Fuel oil Bbl.).....	1.20 -1.25	1.20 -1.25	-1.30
24-26 Fuel oil (Bbl.).....	1.15 -1.20	1.17½-1.22½	1.22½-1.27½
22-26 Fuel oil (Bbl.).....	1.10 -1.15	1.15 -1.20	1.20 -1.25
18-22 Fuel oil (Bbl.).....	1.05 -1.10	1.10 -1.12½	1.12½-1.17½
16-18 Fuel oil (Bbl.).....	-1.05	1.07½-1.12½	1.10 -1.12½
14-16 Fuel oil (Bbl.).....	-1.05	1.07½-1.10	-1.10
†Prices nominal.			
KANSAS*			
38-40 straw distillate.....	- 4	4 - 4¼	4½- 5
36-38 straw distillate.....	- 3¾	3¾- 4	- 4¼
32-36 Gas Oil.....	3¼- 3½	3¾- 4	- 4
18-22 Fuel Oil.....	-1.15	1.15 -1.20	1.20 -1.25
24-26 Fuel Oil.....	1.15 -1.20	1.25 -1.35	1.35 -1.40
*F. O. B. refinery, Kansas destination.			
NORTH TEXAS			
38-40 Straw distillate.....	3¼- 3½	3½- 3¾	3¾- 4
32-36 Gas Oil (Gal.)cracked	2⅞- 3	3⅛- 3⅜	3⅜- 3½
32-36 uncracked gas oil....	3 - 3¼	- 3⅜	- 3½
24-26 Fuel per (Bbl.).....	1.20 -1.25	1.20 -1.25	1.30 -1.40
GULF COASTAL			
Fuel.....	1.60 -1.65	1.60 -1.65	1.60 -1.65
Gas Oil.....	5⅛- 5¼	5⅛- 5¼	5⅛- 5¼

NORTH LOUISIANA	Prices Apr. 4	Prices Mar. 28	Prices Mar. 21
32-36 Gas oil, cracked (Gal)..	3 - 3¼	3¼- 3½	3½- 4
32-36 Gas oil, uncracked(Gal.)	3¼- 3½	3¼- 3½	3¾- 4
16-20 Fuel Oil (Bbl.).....	1.17½-1.22½	1.17½-1.22½	1.15 -1.20
ARKANSAS			
28-32 Gas oil.....	3½- 4	3½- 4	3½- 4
32-36 Gas oil.....	4 - 4¼	4 - 4¼	4 - 4¼
*Smackover Crude Fuel...	-1.15	1.15 -1.20	1.20 -1.25
*For unrestricted shipment.			
CALIFORNIA*			
14-18 Fuel Oil (Bbl.).....	.80 -1.00	.80 -1.00	.75 -1.00
14-18 Bunker Oil (Bbl.)...	.80 -1.00	.80 -1.00	.75 -1.00
30-34 Gas Oil (Bbl.).....	1.30 -1.35	1.30 -1.35	1.20 -1.25
27 + Diesel Oil (Bbl.)....	-1.15	-1.15	1.00 -1.10
*(San Joaquin Valley, San Francisco 4c per bbl. more.)			
NEW ENGLAND (F. O. B. Boston and Fall River)			
30-32 Gas Oil (Gal.).....	- 6	- 6	- 6⅛
Fuel Oil (Bunker C) Bbl..	-1.98	-2.00	-2.00

PETROLATUMS

PENNSYLVANIA (Cents Per Pound in Tank Cars)*

Snow White.....	7¼- 7½	7¼- 7½	7¼- 7½
Lily White.....	- 6¼	- 6¼	- 6¼
Cream White.....	- 5¼	- 5¼	- 5¼
Light Amber.....	2¾- 2¾	2¾- 2¾	2¾- 2¾
Amber.....	2¾- 2½	2¾- 2½	2¾- 2½
Red.....	- 2⅛	- 2⅛	- 2⅛
Green No. 5 Color.....	- 1½	- 1½	- 1⅝

*In barrels ¾c a pound more, carlots.

PETROLEUM COKE

OKLAHOMA (Per ton in car lots)

Lump.....	-$5.00	-$5.00	-$5.00
Breeze.....	- 2.00	- 2.00	- 2.00
Still Run.....	- 3.00	- 3.00	- 3.00

Above prices are f. o. b. refinery in tank car. They are the prices at which the bulk of the products on the open market move. Whoever has knowledge of any open market prices on any considerable quantity of goods differing from the foregoing, will favor us with this information.

(*Continued from Page* 113)

ty for delivery over a period of four months at 2¾ cents, f.o.b. Group 3, being reported. Practically all grades of fuel oil are 5 to 10 cents per barrel lower.

One Oklahoma refiner who sells considerable quantities of bright stock, today advanced his prices on neutral oils stating he would rather put the latter into his bright stock than to take the relatively low current prices for neutrals. Aside from this, no change is noted in list prices for neutral oils and cylinder stocks.

Large quantities of wax have been offered to buyers by refiners in outlying areas, which figure back considerably lower than the prices quoted by Oklahoma sellers. The latter report they have sold no wax for some time past and the lowest quotation on 124-126 white crude scale found today was 3½ cents.

MINNEAPOLIS—Lakeland Oil Co., with headquarters here, which operates bulk stations in Minnesota, Wisconsin and in North and South Dakota, are negotiating for the purchase of the Whitcombe filling station at Adams, Wis. The station will be operated in connection with the company's bulk plant there, according to E. B. McCartney, president.

Gasoline Prices Again Decline In Atlantic Seaboard Market

By Special Correspondent

NEW YORK, April 4.

BULK gasoline declined last week. The Atlantic Seaboard market was soft and competition between refiners and brokers that have been bringing in Group 3 and North Texas gasoline, was keener.

At the beginning of the week some of the big refiners were asking 10½ cents a gallon for U. S. Motor gasoline in tankcars at the refineries. Saturday the market ranged from 9¼ to 9½ cents a gallon.

Many upstate buyers have been purchasing Group 3 and North Texas gasoline from brokers who at the time were quoting on the basis of the seaboard market, considerably below what the New York Harbor refiners were asking. California gasoline is still coming in but the high ocean freight rates have tended to prevent it from competing with Mid-Continent gasoline.

Tank wagon prices are weak. Consumption is increasing but gasoline stocks at refineries are large.

Conditions in the Gulf gasoline market did not improve and U. S. Motor in bulk at refineries, was quoted at 8 cents a gallon. Most jobbers are buying hand-to-mouth.

Kerosene was weaker along the Atlantic Seaboard. Prime white 41-43 was freely offered at 7½ cents a gallon at refineries. For 43-45 water white the price, in tankcars at refineries was 8 cents a gallon.

Jobbers have been buying only small quantities in the open market. Consumption has been holding up well but much of this is being taken care of by standing contracts.

Gulf refiners reported less domestic demand for kerosene. Stocks are large. For 44 water white refiners were asking 7¼ cents a gallon at refineries while 41-43 prime white was held at 6¼ cents.

WOOSTER, O.—Bulk storage for linseed oil and turpentine has been erected here by the Arrow Oil Co., which has its headquarters here. These products are being handled for the paint and hardware trade. A bulk plant has been erected at Creston, O., from which gasoline and kerosene deliveries will start Apr. 1.

Chicago Resale Market Has Quiet Week; Gasoline Prices Steady

CHICAGO, April 2

REACTION from the recent gasoline buying for over April was reflected in the Chicago resale market this week. Many jobbers and carload marketers filled their requirements for the month and were out of the market, trade reported, which resulted in a quiet week. U. S. Motor gasoline continued to be more active than high tests.

Prices on all gasolines were steady. U. S. Motor grade ranged from 6½ to 6¾ cents. Today the market closed at 6½ cents with quotations up to 6¾ cents. The 60-62, 437 e.p. gasoline remained a quarter above U. S. Motor at 6¾ to 7 cents. The 60-62, 400 e.p. grade was quoted at 7 to 7¼ cents; 64-66, 375 e.p. gasoline at 7½ to 7¾ cents; and 68-70, 350-360 e.p. at 8 to 8¼ cents.

Kerosene was slightly more active this week than last, several sellers reported. The 41-43 w.w. grade was 4¾ to 4⅞ cents over the week, with some quotations earlier in the week at 4⅝ cents and some at 5 cents.

OTHER burning oils continued quiet. The 38-40 straw distillate was quoted at 3¾ cents until Friday and closed at 3⅝ to 3¾ cents. The 32-36 straw zero gas oil was 3½ cents; 32-36 dark zero oil was 3¼ to 3⅜ cents, and 32-36 ordinary dark gas oil 3⅛ to 3¼ cents. Demand for these commodities is practically negligible, the trade reported, and jobbers are said to be going into the summer with considerable stocks on hand.

Fuel buying continued on a hand-to-mouth basis. Inquiries on future requirements have not been large for several weeks. Except for the lower gravities, fuel prices were also steady. The 28-30 grade was quoted at $1.30 to $1.35; 24-26 fuel at $1.17½, and 22-26 grade at $1.15 to $1.17½. The 18-22 fuel was offered at $1.12½ to $1.15 Monday and dropped on Tuesday and over the balance of the week to $1.10 to $1.12½. One marketer offered 18-22 over the balance of the month at $1.07½. Sales of 16-20 fuel were reported at $1.05. Smackover remained at $1.20 until today when the market was $1.17½ to $1.20.

Sales managers on the road this week reported highway conditions were still unfavorable to travel. Weather conditions during the week were unsettled with a general rain over the middle section of the marketing territory Friday.

Moderate temperatures are forecast for next week in this territory with colder weather at the close. Several rains are forecast.

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Roxana Sells High Test At Posted Price

Staff Special

CHICAGO, April 1.—Effective this date, Roxana Petroleum Corp. joined the ranks of those oil companies selling a high test, anti-knock gasoline to the public at the price prevailing for U. S. Motor gasoline. Roxana has ceased to sell its old competitive grade motor fuel and announced with full page advertisements in morning papers of April 1, that the new "400 Extra Dry" has a 400 end point and a gravity around 62.

For some time Roxana Petroleum Corp. has been marketing a high test, anti-knock gasoline at a premium price, called "Super Shell Gasoline." From the start it has been slightly superior to the new "400 Extra Dry" but it is being improved currently and will stay on the market under the same name and sell at the same premium. The improved "Super Shell" will be a 64-66 gravity material.

Persons connected with the company say Roxana has never done much advertising to the consuming trade direct, although it has advertised its merchandise to the jobbers and re-selling agents through the medium of trade journals. The campaign just starting is said to be backed by an appropriation of $500,000.

Week's Price Changes Tank Wagon Markets

Gasoline Changes

Standard of New Jersey—T.w. and s.s. prices gasoline advanced 2 cents, Maryland, to cover increase in tax of that amount, bringing total state tax to 4 cents, **April 1.**

Standard of Indiana—T.w. and s.s. price gasoline reduced 2 cents, Quincy, Ill., to 14.2 cents and 16.2 cents respectively, **March 30.**

Standard of California—S.s. price only of gasoline reduced 2 cents, Los Angeles, to 14.5 cents, **March 31.**

Correction

Price of Oklahoma 60-62, 437 e.p. gasoline in the refinery table of the March 30 issue of National Petroleum News, in the Mar. 28 column, was erroneously published as 6¼ to 6¾ cents. Price on Mar. 28 should have been 6½ to 6¾ cents.

Price of Arkansas 28-32 gas oil on Mar. 21 should have been 3½ to 4 cents, instead of 4 cents flat as shown in the Mar. 30 and 23 issues.

Prices are corrected in the proper columns of the refinery table in this week's issue.

Gulf Coastal Lubes Quiet

HOUSTON, April 2.—Conditions in the Gulf Coastal lubricant market are quiet. Demand from the jobbing trade continues in about the same ratio that has existed over the last few weeks. Export sales have failed to materialize, although an inquiry for red oil is reported in circulation. Prices remain unchanged from levels of a week ago.

Foreign Opportunities

Reserved information may be obtained from the Bureau of Foreign and Domestic Commerce, Washington, and its district and cooperative offices by duly registered firms and individuals upon written request by opportunity number. The Bureau does not furnish credit ratings or assume responsibility as to the standing of foreign inquirers; the usual precautions should be taken in all cases, and where no references are offered it does not necessarily imply that satisfactory references could not be given. Correspondence may be in English unless otherwise stated.

24479.—**Gasoline, kerosene and edible mineral oil,** Guadeloupe, West Indies, agency.

24501.—**Kerosene and light motor oils,** Montevidio, Uruguay, agency.

24508.—**Paraffin,** Milan, Italy, agency.

24536.—**Kerosene, gasoline, lubricating oils and greases,** Lingah, Persian Gulf, purchase and agency.

24539.—**Paraffin and mineral oil,** Valparaiso, Chile, agency.

24540.—**Gasoline,** Cologne, Germany, purchase.

24545.—**Gasoline, kerosene, lubricating oils and greases, paraffin,** Dairen, Manchuria, purchase and agency.

24582.—**Crude oil,** Bombay, India, purchase and agency.

24583.—**Kerosene, lubricating oils and greases, paraffin,** Berlin, Germany, agency.

24584.—**Asphalt products,** London, England, agency.

Tank Wagon, Service Station Markets for Gasoline and Kerosene In United States Territories and Canada

These Prices in Effect April 4, 1927

S. O. NEW JERSEY TERRITORY

	Gasoline			Oil
	T.W.	Tax	Total T.W.	S.S	T.W.
Atlantic City, N. J.	17	0	17	*	14
Newark, N. J.	17	0	17	19	14
Annapolis, Md.	17	4	21	*	14
Baltimore, Md.	17	4	21	24	10
Cumberland, Md.	17	4	21	24	14
Washington, D. C.	17	2	19	22	12
Danville, Va.	17	4½	21.5	*	14
Norfolk, Va.	17	4½	21.5	24.5	14
Richmond, Va.	17	4½	21.5	24.5	14
Roanoke, Va.	17	4½	21.5	24.5	14
Petersburg, Va.	17	4½	21.5	24.5	14
Williamsburg, Va.	17	4½	21.5	*	14
Charleston, W. Va.	17	3½	20.5	23.5	14
Clarksburg, W. Va.	17	3½	20.5	23.5	14
Keyser, W. Va.	17	3½	20.5	*	14
Parkersburg, W. Va.	17	3½	20.5	23.5	14
Wheeling, W. Va.	17	3½	20.5	23.5	14
Charlotte, N. C.	17	4	21	24	14
Hickory, N. C.	17	4	21	24	14
High Point, N. C.	17	4	21	*	14
Mt. Airy, N. C.	17	4	21	24	14
Salisbury, N. C.	17	4	21	24	14
Charleston, S. C.	17	5	22	25	14
Columbia, S. C.	17	5	22	22	14

*Dealers set own prices. S. O. New Jersey does not operate station.

S. O. NEW YORK

Due to local price conditions at many points in S. O. New York territory, actual prices on both gasoline and kerosene are being made at under the posted tank wagon prices published below.

*New York City	20	0	20	24	16
Albany, N. Y.	20	0	20	22	16
Buffalo, N. Y.	20	0	20	23	14
†Rochester, N. Y.	17	0	17	20	14
Syracuse, N. Y.	20	0	20	22	16
Boston, Mass.	20	0	20	22	15
Augusta, Me.	20	3	23	26	16
Manchester, N. H.	20	2	22	24	16
Burlington, Vt.	20	2	22	24	16

*In steel barrels.

†It is reported that S. O. New York is selling a second grade of gasoline at Rochester, from 2 to 3c below the above posted prices which apply on its Socony grade.

ATLANTIC REFINING

Pittsburgh, Pa.	18	*	18	*23	15
Philadelphia, Pa.	17	*	17	*21	15
Allentown, Pa.	18	*	18	*23	15
Erie, Pa.	16	*	16	*21	15
Scranton, Pa.	18	*	18	*23	15
Altoona, Pa.	18	*	18	*23	15
Dover, Del.	18	2	20	23	15
Wilmington, Del.	18	2	20	23	15
Providence, R. I.	20	1	21	23	16
Boston, Mass.	20	0	20	22	15
Springfield, Mass.	20	0	20	22	16
Worcester, Mass.	20	0	20	22	16
Hartford, Conn.	20	2	22	24	16
New Haven, Conn.	20	2	22	24	16

*2-cent state tax is collected by retail dealer and paid by him directly to state.

S. O. KENTUCKY

Lexington, Ky.	15	5	20	23	16
Louisville, Ky.	15	5	20	23	16
Covington, Ky.	16	5	21	24	16
Clarksdale, Miss.	15	4	19	22	14.5
Gulfport, Miss.	††16.5	4	††20.5	23.5	15
Jackson, Miss.	15	4	19	22	15.5
Natchez, Miss.	14.5	4	18.5	21.5	15
Vicksburg, Miss.	14.5	4	18.5	21.5	15
Birmingham, Ala.	17	4	21	24	16.5
Mobile, Ala.	16	4	20	23	16
Montgomery, Ala.	18	4	22	25	*17.5
Atlanta, Ga.	†17	3½	21	24	17
Augusta, Ga.	†17	3½	21	24	16
Macon, Ga.	†17	3½	21	24	17
Savannah, Ga.	†17	3½	21	23	15
Jacksonville, Fla°	15	4	19	22	15
Miami, Fla°	17	4	21	24	16.5
Tampa, Fla°	15	4	19	22	15
Pensacola°	**16	4	**20	23	16

*Local privilege tax of 1 cent on gasoline and ½ cent on kerosene at Montgomery included.

†Georgia has ½ cent per gal. inspection fee on gasoline which is deducted as well as the state gasoline road tax of 3½ cents, to get the actual net tank wagon market to dealer.

°Florida gasoline prices include ½c inspection fee.

**Both tank wagon prices include 1c city tax at Pensacola, which went into effect Oct. 15, 1926.

††Both tank wagon prices at Gulfport include Harrison county privilege tax of 2c.

S. O. INDIANA

	Gasoline				Oil
	T.W.	Tax	Total T.W.	S.S.	T.W.
Chicago, Ill.	16	0	16	18	13
Decatur, Ill.	16.2	0	16.2	18.2	13.1
E. St. Louis, Ill.	15.1	0	15.1	17.35	12.2
Joliet, Ill.	16.4	0	16.4	18.4	13.3
Peoria, Ill.	16.2	0	16.2	18.2	13.1
Quincy, Ill.	14.2	0	14.2	16.2	11.4
Indianapolis, Ind.	17.2	3	19.2	21.2	14.2
Evansville, Ind.	16	3	19	21	14
South Bend, Ind.	16.4	3	19.4	21.4	14.4
Detroit, Mich.	16.8	2	18.8	20.8	14.7
Grand Rapids, Mich.	16.7	2	18.7	20.7	14.6
Saginaw, Mich.	16.9	2	18.9	20.9	14.8
Green Bay, Wis.	16.6	2	18.6	20.6	13.4
Madison, Wis.	16.3	2	18.3	20.3	13.1
Milwaukee, Wis.	16.1	2	18.1	20.1	12.9
La Crosse, Wis.	17.2	2	19.2	21.2	14
Minneapolis, Minn.	15.2	2	17.2	19.2	13.9
Duluth, Minn.	17.5	2	19.5	21.5	13.9
Mankato, Minn.	17.1	2	19.1	21.1	13.7
Des Moines, Iowa	14	2	16	18	13.3
Davenport, Iowa	16.5	2	18.5	20.5	13.3
Sioux City, Iowa	16.1	2	18.1	20.1	12.9
Mason City, Ia.	16.5	2	18.5	20.5	13.3
St. Louis, Mo.	*15.6	2	17.6	19.9	12.3
Kansas City, Mo.	†16	2	18	20	11.6
St. Joseph, Mo.	†16.5	2	18.5	20.5	12.2
Fargo, N. D.	18.9	2	20.9	22.9	15.9
Grand Forks, N. D.	19.2	2	21.2	23.2	16.2
Minot, N. D.	18.9	2	20.9	22.9	15.9
Pierre, S. D.	17.5	3	20.5	22.5	14.9
Huron, S. D.	17.5	3	20.5	22.5	14.9
Wichita, Kans.	14.8	2	16.8	18.8	11.8
Bartlesville, Okla.	14	3	17	19	11.8

S. O. Indiana Q. D. A. schedule on tank wagon deliveries of gasoline, effective March 3 thru territory, except Wisconsin effective March 4: 50 gals. and over on delivery, 1c discount; 6,000 gals. and over per month, 1½c; 10,000 gals. and over per month, 2c; 15,000 gals. and over per month, 3c, except in Chicago.

Service station discounts: 200 gals. or more per month, and 2400 gals. or more per year, 2c per gal.

March 1, 1c discount on kerosene in 50 gal. dumps thru territory.

*Includes city tax of ½c.

†Includes city tax of 1c.

S. O. NEBRASKA

Omaha, Neb.	14.25	2	16.25	19.25	13.25
McCook	17.75	2	19.75	21.75	14.75
Norfolk	16	2	18	20	13.75
North Platte	17.75	2	19.75	21.75	14.5
Scottsbluff	17.25	2	19.25	21.25	14

CONTINENTAL OIL

Denver, Colo.	15	2	17	19	15.5
Pueblo, Colo.	15	2	17	18	15.5
Grand Junction, Colo.	18.5	2	20.5	22.5	19
Casper, Wyo.	15	3	18	20	14
Cheyenne, Wyo.	17	3	20	22	15.5
Butte, Mont.	19	3	22	22	19
Helena, Mont.	19	3	22	24	19
Salt Lake City, Utah.	17.5	3½	21	23	17
Boise, Ida.	19.5	4	23.5	25.5	19
Twin Falls, Ida.	19.5	4	23.5	25.5	19
Albuquerque, N. M.	17	5	22	25	18

S. O. CALIFORNIA

Phoenix, Ariz.	16	3	19	23	21.5
Los Angeles, Cal.	10.5	2	12.5	14.5	15.5
Fresno, Cal.	11	2	13	17	16.5
San Francisco, Cal.	11	2	13	17	15.5
Reno, Nev.	15	4	19	23	19
Portland, Ore.	11	3	14	18	16.5
Seattle, Wash.	11	2	13	17	16.5
Spokane, Wash.	15	2	17	21	20.5
Tacoma, Wash.	11	2	13	17	16.5

S. O. LOUISIANA

Little Rock, Ark.	13	4	17	20	12
Alexandria, La.	13	2	15	18	†14
Baton Rouge, La.	12	2	14	17	†12.5
Lake Charles, La.	13.5	2	15.5	18.5	†14
New Orleans, La.	*13.5	2	15.5	18.5	*14
Shreveport, La.	12	2	14	17	†13
Lafayette, La.	13	2	15	18	†13.5
Bristol, Tenn.	16	3	19	22	14
Chattanooga, Tenn.	16.5	3	19.5	22.5	15
Knoxville, Tenn.	16.5	3	19.5	22.5	15
Nashville, Tenn.	15	3	18	21	15
Memphis, Tenn.	14	3	17	20	14

*Includes 1c parish tax on gasoline and 2c tax on kerosene: 1c parish tax and 1c state tax.

†Kerosene prices in Louisiana include 1c state tax.

S. O. OHIO

	Gasoline				Oil
	T.W.	Tax	Total T.W.	S.S.	T.W.
All Ohio points	18	2	20	22	15

MAGNOLIA PETROLEUM

Muskogee, Okla.	13	3	16	19	10
Oklahoma City	13	3	16	19	10
Tulsa, Okla.	13	3	16	19	10
Fort Smith, Ark.	13	4	17	20	12
Little Rock, Ark.	13	4	17	20	12
Texarkana, Ark.	†15	4	††19	††19	12
Dallas, Tex.	**16	3	**19	**19	13
Fort Worth, Tex.	††13	3	††16	††17	13
Houston, Tex.	†16	3	†19	†19	13
San Antonio, Tex.	†15	3	†18	†18	11
El Paso, Tex.	***16	3	***19	***19	16

*Within city of Texarkana the state tax on gasoline is 3c per gal. conforming with the Texas state tax. In Texarkana district outside of the city the 4c state tax applies.

†3c per gal. discount to dealers at Texarkana, Tex., Houston and San Antonio.

††1c per gal. discount to dealers at Fort Worth.

**4c per gal. discount to dealers at Dallas, Mar. 28.

***2c per gal. discount to dealers at El Paso, Feb. 28.

V. M. & P. NAPHTHA

(Changes ordinarily occur coincident with gasoline price changes)

	Oleum Spirits	V.M. & P. Naphtha	Cleaner Naphtha
Chicago	18	20	20
Detroit	19.7	21.7	21.7
Kansas City	18.2	20.2	20.2
Milwaukee	18.7	*22.7	*22.7
Minneapolis	*22	*24	*24
St. Louis	17.9	19.9	19.9
New York	..	21	— —

*Includes 2c state tax.

CANADA

(Per Imperial Gallon, which is 1.2 American Gallons)

ONTARIO

	Gasoline				Oil
	T.W.	Tax	Total T.W.	S.S.	T.W.
Toronto	23.5	3	26.5	30	23
Ottawa	23.5	3	26.5	30	23
Cochrane	28.5	3	31.5	40	28
Ft. William	26.5	3	29.5	33	25.5

MANITOBA

Winnipeg	26.5	3	29.5	33	25.5

SASKATCHEWAN

Regina	29.5	0	29.5	34	29.5

ALBERTA

Edmonton	28.5	2	30.5	34	27.5
Calgary	26.5	2	28.5	32	25.5

BRITISH COLUMBIA

Vancouver	22	3	25	29	29

QUEBEC

Montreal	23.5	3	26.5	30	25
Quebec City	25.5	3	28.5	32	25
Three Rivers	25.5	3	28.5	32	25

NEW BRUNSWICK

St. John	26.5	3	29.5	34	26
Moncton	26.5	3	29.5	34	26

NOVA SCOTIA

Halifax	26.5	3	29.5	34	26
Sydney	28.5	3	31.5	36	28

PRINCE EDWARD ISLAND

Charlottetown	26.5	3	29.5	33	26

Note: In districts surrounding these points 1c additional is added to city price.

Foreign Interest in Gasoline is Keener But Sales are Light; Kerosene Weak

By Special Correspondent
NEW YORK, April 4

EXPORT buying interest in gasoline was keener last week than it has been in a long time. It was persistently reported that Jupiter of France had purchased eight bulk cargoes of U. S. Motor and 64-66 gravity 375 end point gasoline, averaging 56,000 barrels each but several smaller refiners who had been bidding for this business denied that the contracts had been let. United Kingdom and Spanish buyers were also showing more interest.

Bulk Gasoline was lower at Atlantic seaboard refineries but steadier at the Gulf. Kerosene was weak both at the Gulf and New York. Gas oil was slightly lower at the Gulf. Waxes were slightly easier. Lubricating oils marked time. Bunker oil was not quite as firm as the previous week.

Export Gasoline—New York

Export demand for gasoline lagged last week. Foreign buyers showed more interest but no bulk sales were reported. There was an inquiry from Spain for 45,000 barrels of U. S. Motor and 64-66 gravity 375 end point gasoline for May shipment but this failed to materialize.

New York harbor refiners were asking 9¼ to 9½ cents a gallon for U. S. Motor in bulk at the refineries. Cased gasoline demand was a little more spirited and a South American buyer purchased 35,000 cases of U. S. Motor and 64-66 gravity, 375 end point from a leading Independent refiner for April shipment. There is a good contract movement to the Levant. Australasian buyers were negotiating for 50,000 cases of U. S. Motor and 64-66 gravity 375 end point gasoline and it is expected that a leading Independent refiner will get this business.

Export Gasoline—Gulf Ports

It was persistently reported last week that a large French buyer had purchased eight bulk cargoes of U. S. Motor and 64-66 gravity 375 e.p. gasoline for May-December shipment, averaging 56,000 barrels each. The report lacked confirmation although it was said that two large Independent refiners had booked four cargoes apiece. One of the leading refiners was negotiating for the sale of a cargo of 55,000 barrels of U. S. Motor and 64-66 gravity 375 end point gasoline in conjunction with prime and water white kerosene for May shipment to England.

At the close of the week, U. S. Motor was held at 7½ cents a gallon; 60-62 gravity 400 end point at 7¾ cents; 61-63 gravity 390 e.p. at 8⅛ cents and 64-66 gravity 375 end point at 9 cents a gallon, bulk, cargoes. Cased gasoline demand was more active. A Near Eastern buyer was reported to have purchased 75,000 cases of U. S. Motor and 64-66 gravity 375 end point gasoline for May shipment. U. S. Motor in cases was quoted at $1.75 and 64-66 gravity 375 end point at $1.95 a case, in cargo lots.

Export Kerosene—New York

Export demand for kerosene was a trifle more active but no bulk cargo movements were disclosed. A leading refiner is reported to have sold 60,000 cases of 44 water white for April-May shipment to the Far East, presumably Japan but the destination was not made known.

Bulk kerosene inquiries were more numerous but most of the big Continental buyers appeared content to withhold orders pending developments over here. The asking price for 43-45 water white was steady at 7¾ to 8 cents a gallon refineries. One large French buyer was inquiring for 50,000 barrels of prime and water white kerosene.

Export Kerosene—Gulf Ports

Aside from the above reported inquiries there was little foreign buying interest in kerosene. Prices were steady at the declines, but Europeans, as a rule, are not expected to stock up for the fall and winter until the later spring and summer months. Prime white 41-43 gravity was freely offered at 6 cents a gallon and 44 water white at 7 cents a gallon, bulk cargoes. The majority of large European consumers and marketers are well covered by standing contracts. There has been a better movement to the Levant but this has been mainly in cased goods.

Leading refiners are shipping larger quantities of cased kerosene to the west coast of Africa. South American buyers are also operating on a larger scale. One of the leading Independent refiners reported the sale of 50,000 cases of prime and water white for May shipment to the Near East. Chinese buyers have been showing less interest in kerosene, owing to the unsettled conditions there.

In cargo lots, prime white was quoted at $1.55 a case while water white was freely offered at $1.65 a case.

Wax Market—New York

Demand for white crude scale wax showed a slight improvement at the start of the week but slumped badly after Tuesday. Prices were very weak. The British candle making season is now over and no buying of consequence is expected from this quarter for some time to come.

Leading local sellers were asking 3¼ cents a pound for white crude scale 122-124 A.m.p. while the same price was quoted for 124-126 A.m.p. Fully refined waxes were neglected throughout the week. Export demand has been almost entirely confined to immediate requirements. Match wax was dull and weak. South American buyers have been showing little interest.

Wax Market—Gulf Ports

The Gulf market declined again last week. Buyers have been showing a minimum of interest while competition among sellers is still very keen. The export demand was even lighter than the preceding week. South American buyers have been inquiring in a more active way but confined their purchases to immediate requirements.

Saturday's closing prices were: white crude scale 124-126 A.m.p. 3⅛ cents; semi-refined 124-126 A.m.p. 3.20; Fully refined 123-125 and 125-127 A.m.p. 4 cents; 128-130 A.m.p. 4.05; 133-135 A.m.p. 5¼ cents; 135-137 A.m.p. 5½ cents a pound.

Bunker Oil—New York

Regardless of the depression existing in the other major petroleum products, there was a fairly good movement in grade C bunker oil at $1.75 a barrel last week. The f.a.s. price was $1.81½. Fresh buying orders were mainly for bunkering purposes and no new contracts were located. However, stocks are not very large owing to the heavy movement against contracts. Diesel oil demand was a little more active at $2.40 a barrel f.o.b. New York harbor refineries.

Bunker Oil—Gulf Ports

Most of the big refiners reported a steady contract movement and the market maintained a steady tone. In cargo lots the price of grade C was $1.50 a barrel f.o.b., although it was persistently rumored that one factor was willing to sell at $1.45 a barrel.

For bunkering purposes the asking price was $1.65 a barrel f.o.b. New Orleans. Conditions in the vicinity of Tampico have not shown any improvement. No cargo offerings were reported while in small lots for bunkering purposes the asking price was $1.60 a barrel f.o.b. Tampico, including taxes. Heavy Panuco crude oil was quoted at $1.35 a barrel, taxes to be added.

Lubricants—New York

Pennsylvania lubricating oils were in slightly better export demand last week. Prices, however, were easy as the volume of buying the past few weeks has been below expectations. Pennsylvania 600 s.r. unfiltered cylinder oil in barrels, New York was offered at 18½

cents a gallon. French buyers were inquiring for lots of from 200 to 500 barrels. Bright stock was in better demand. Neutral oils were very quiet.

Lubricants—Gulf Ports

Conditions in the Gulf lubricating oil markets were less favorable last week. There is still keen competition among refiners while export buyers are holding off. It was reported that a cargo of 35,000 barrels of assorted lubricants had been sold by a leading Independent refiner for nearby shipment to England but details were withheld. Domestic buying was hand-to-mouth as many buyers feel that prices are due to go lower.

Gas Oil—New York

Export demand for gas oil was very disappointing last week. The majority of European buyers have been holding off for lower prices and with Polish and Russian oil plentiful, at low prices, no foreign buying of consequence is expected in the domestic markets for some time. New York harbor refiners were offering 36-40 gravity gas oil freely at 6 cents a gallon, while 28-34 was dull and easy at 5¾ cents a gallon. Stocks on hand are large.

Gas Oil—Gulf Ports

Although domestic demand for gas oil showed a little improvement buying was still spasmodic and mainly for nearby requirements. Export inquiries and orders have been scarce. It was reported that a leading refiner had sold a cargo of 28,000 barrels of dark gas oil 32 plus gravity for April shipment to France but confirmation was lacking. The asking price for this oil was 4⅞ to 5 cents a gallon while 26-28 red transparent was quoted from 5 to 5⅛ cents a gallon.

Petrolatums

Snow white petrolatum showed a slightly easier tendency last week. The majority of foreign buyers have been operating along very small lines. Domestic demand has been spasmodic and light. Medicinal oils were less active.

Eastern Kentucky Refinery Market

ASHLAND, April 4.—Demand for all products in eastern Kentucky refining district has improved. Prices of all products are unchanged, except 60-62 and 64-66 gasolines, which are ¼ cent lower. Quotations on April 4 were:

58-60 gasoline	9½
60-62 gasoline	9¾
64-66 gasoline	10
68-70 gasoline	10¾
41-43 w.w. kerosene	7
34-36 gas oil	5¾
24-26 fuel oil	4¼
14-16 fuel oil	4¼

TULSA, March 31.—H. H. Hamilton, formerly district sales manager for the Vacuum Oil Co. at Dallas, has joined the retail marketing department of the Marland Refining Co. He will be lubricating oil sales manager for the southwestern division.

Complete Export Markets

New York Export Market

GASOLINE	Apr. 4	Mar. 28
U. S. Motor Bulk Ref.	09¼-09½	10¼-10½
U. S. Motor cases	24.40	-24.40
KEROSENE		
43-45 150 W.W. Bulk Ref.	07¾	-08
41-43 Prime White Bulk Ref.	07½	-07¾
43-45 150 W.W. Cases	18.15	-18.15
42-44 110 S.W. Cases	17.15	-17.15
GAS OIL		
36-40, Bulk Refinery	-06	-06
28-34, Bulk Refinery	-05¾	-05¾
MEXICAN BUNKER OIL		
Grade C, f. o. b. ref. Bulk	-1.75	-1.75
Diesel Oil f. o. b. ref. Bulk	-2.40	-2.40

LUBRICATING OILS

The following prices are cooperage basis f. o. b. New York, products being manufactured by inland refineries.

CYLINDER OILS (Bbls.)

1 inch Immersion Test; All Penna. Products

Bright Stock dark	42½	-42½
Filtered D 600	34	-34
Filtered E 600-Warren	27	-27
Unfiltered 600 s. r.	18	-18
Unfiltered 650 s. r.	22½	-22½
600 Flash s. r.	26	-26
650 Flash	38	-38

RED PARAFFIN (Bbls.)

(Viscosity at 70)

300 vis.	No. 5 color	-19	-19
250 vis.	No. 5 color	-17	-17
475 Viscosity	No. 5 color	-21½	-21½

NEUTRAL OILS (Bbls.)

(Viscosity at 70)

200 Pale	No. 3 color	-42½	-42¾
180 Pale	No. 3 color	-37¾	-38
150 Pale	No. 3 color	-36¾	-36½

BLACK OIL (Bbls.)

25-30 cold test	13¼	-13¼
15 cold test	14¼	-14¼

MEDICINAL OILS

(Includes Price of Drums)
(Penna. Stocks)

	Apr. 4	Mar. 28
Domestic 875-.885 s. g.	- .85	- .85
Domestic 865-.870 s. g.	.75- .80	.75- .80
Russian 885-.890 s. g. 325-330 vis	1.00-1.10	1.00-1.10

WAXES

(Penna. Stocks)
(In Cents per Pound, F. A. S. Carload Lots)

WHITE CRUDE SCALE (Shipped in Bbls.)

122-124 A. m. p.	-03¼	-03¼
124-126 A. m. p.	-03¼	-03⅜

FULLY REFINED (Shipped in Burlap Bags)

123-125 A. m. p. Philadelphia.	-04¼	-04¼
125-127 A. m. p.	-04¼	-04¼
128-130 A. m. p.	-04⅜	-04⅜
130-132 A. m. p.	-04⅝	-04⅝
133-135 A. m. p.	-05½	-05½
135-137 A. m. p.	-05¾	-05¾

YELLOW CRUDE SCALE

124-126 A. m. p.	.03¾	-03¼

PETROLATUMS

(Penna. Stocks)
Per Pound

Dark Green	01⅞	01⅞
Veterinary	03⅛	03⅛
Light Amber	03¼	03¼
Dark Amber	03⅜	03⅜
Cream	06	06
Lily White	07½	07½
Snow White	08½	08½

Gulf Export Market

GASOLINE
F. O. B. Seaboard
(Shipments of 20,000 Bbls. and over)

	Apr. 4	Mar. 28
U. S. Motor, Bulk	07½	-.07½
60-62 400 e. p. Bulk	07¾	-.07¾
61-63 390 e. p. Bulk	08⅛	-.08½
64-66 375 e. p. Bulk	.09	-.09
U. S. Motor, Cases (cargo lots)	1.75	-1.75
64-66 Cases (cargo lots)	1.95	1.95
KEROSENE		
Water White, 43-45 Bulk	.07	-07¼
Prime White, 41-43 Bulk	.06	-06⅛
Water White, cases (cargo lots)	1.65	1.65
Prime White, cases (cargo lots)	1.55	1.55
DOMESTIC GAS AND BUNKER OIL		
26-28, gravity, Bulk*	04¼	-05¼
32 plus, bulk, Dark	04½	04⅛-05
Grade C, Bunker oil	1.65	-1.65
Cargoes	1.45-1.50	1.50-1.55

*Translucent through neck of a 4 oz. bottle.

MEXICAN CRUDE AND BUNKER OILS
F. O. B. Steamer Tampico

Heavy, Panuco crude Taxes to be added	1.35	-1.40
Grade C, Bunker oil, F. O. B. Tampico, For Bunkering Purposes, taxes paid	1.60	-1.60

SOUTH TEXAS
(Viscosity at 100° F; cold test 0)
(Tanker, F. O. B. Houston)

LUBRICATING OILS	Apr. 4	Mar. 28
100 Vis. No. 2 Unfiltered Pale	07	07½
150 Vis. No. 2½ Unfiltered Pale	09½	09½
200 Vis. No. 3 Unfiltered Pale	10	10
300 Vis. No. 3 Unfiltered Pale	11	11
500 Vis. No. 3½ Unfiltered Pale	13	13
200 Vis. No. 5½ Red Oil	08½	08½
300 Vis. No. 5½ Red Oil	09½	09½
500 Vis. No. 6 Red Oil	11	11

Pacific Export Market

(Cargo lots quotations at seaboard, Los Angeles Gravity test on A. P. I. scale)

	Apr. 4	Mar. 28
Gasoline, U. S. Motor— 53°-55°	7½-8	8½-9
Gasoline, U. S. Motor— blends and special cuts	8½-9	9½-10
Gas Oil, 30°—34° per bbl.	$1.15-1.20	1.22½-1.30
Diesel Oil, 27°—plus per bbl.	$1.00-1.15	1.00-1.10
Bunker Oil, 14°—18° bbls	$ .75-1.00	.80-1.00
Fuel Oil, 14°—18° per bbl.	$ .75-1.00	.80-1.00
Kerosene, W. W. 38°—40° per gal., 125-150 flash test	.06 -06½	.06-.06¼
Cased Goods		
Gasoline, U. S. Motor	$2.25-2.40	2.25-2.40
Kerosene, W. W. 38°—40° per case, 125-150 flash	$1.50-1.60	$1.50-1.60

N. Y. Domestic Market

The following light oil, gas and fuel oil prices are F. O B New York refineries, being products made from Domestic (including California) and Mexican Crudes.

	Apr. 4	Mar. 28
Gasoline:—		
California Motor, cargoes laid down N. Y.	09¼	-10¼
U. S. Motor Tank Cars Delivered greater N.Y.	-10¼ 11	-11⅛
U. S. Motor Tank Cars Bayonne	09¼-09½ 10	-10½
U. S. Motor Tank Cars, *Atlantic Seaboard Terminals	09¼-09½ 10	-10½
Kerosene:—		
43-45 150 W. W. Tank Cars de'd greater N.Y.	-08¾	-09
41-43. Bulk Ref. Prime	07½-08	07¾-08
Fuel Oils:—		
Grade C Bunker f.o.b. N.Y. Ref	-1.75	-1.75
Diesel Oil f. o. b. Refinery	-2.40	-2.40
Gas Oil, 36-40, Bulk Refinery	-06	-06
Gas Oil, 28-34, Bulk Refinery	-05¾	-05¾
Furnace Oil, 38-42, Bulk, Refinery	-07½	-07½
Furnace Oil from Tank Wagons	-12	-12

*New York, Philadelphia, Portsmouth, Va., Charleston, S. C.

Crude Oil Prices, as Posted by Major

EASTERN FIELDS

(Posted by Joseph Seep Purchasing Agency)

Penna. Grade Oil in New York Transit Lines (Alleghany, N. Y. District)	$3.15
Bradford District Oil in National Transit Lines (Bradford District)	3.15
Penna. Grade Oil in National Transit Lines (Other Pennsylvania)	3.05
Penna. Grade Oil in Southwest Penna. Pipe Lines (Other Pennsylvania)	3.05
Penna. Grade Oil in Eureka Pipe Lines (West Virginia)	3.00
Penna. Grade Oil in Buckeye Pipe Lines (Macksburg, O. district)	2.85
Keister Grade in National Transit Lines (Butler Co.)	1.25
Cabell Grade in Eureka Pipe Lines (West Virginia)	1.40
Corning Grade in Buckeye Pipe Lines (Ohio)	1.55
Corning, O. heavy grade	1.45
*Somerset Oil in Cumberland Pipe Lines (Kentucky)	1.50
Ragland Grade in Cumberland Pipe Lines (Kentucky)	.95

*Somerset oil run prior to Oct. 1, 1922 takes price of 6 cents lower than above quotations.

(Posted by Stoll Oil Refining Co.)

Oil City, Ky., oil in Stoll lines.....$1.50

CENTRAL STATES FIELDS

Posted by Ohio Oil Co.

Effective March 14, 1927

Wooster	$1.77	Plymouth	$1.33
Lima	1.71	Western Kentucky	1.33
Waterloo	1.35	*Canadian Petrolia	2.11
Indiana	1.48	*Oil Springs	2.18
Princeton	1.60	*Posted by Imperial Oil Ltd.	
Illinois	1.60		

OKLAHOMA, KANSAS And NORTH TEXAS

Prices of Prairie Oil & Gas Co.

(In Oklahoma, Kansas, North and East Central Texas)

Effective March 12, 1927

28-28.9	$1.12	34-34.9	$1.24
29-29.9	1.14	35-35.9	1.26
30-30.9	1.16	36-36.9	1.28
31-31.9	1.18	37-37.9	1.30
32-32.9	1.20	38-38.9	1.32
33-33.9	1.22	39-39.9	1.34
40-40.9	$1.36	47-47.9	$1.50
41-41.9	1.38	48-48.9	1.52
42-42.9	1.40	49-49.9	1.54
43-43.9	1.42	50-50.9	1.56
44-44.9	1.44	51 51.9	1.58
45-45.9	1.46	52 and above	1.60
46-46.9	1.48		

Above schedule met on March 12, by Gulf, Mid-Continent Pet. Corp., and Empire; by Carter, Humble and the Texas Co. on March 14.

Humble Oil & Refining Co. Prices

(Ranger, North Texas, Mexia, Powell, Richland, Wortham, Lytton Springs, Currie, Moran and Nocona crudes all in Texas.)

March 14, same schedule as Prairie in above fields except that Humble is paying 2c less for each degree of gravity on oil below 28°.

Mirando, Tex.....$1.00

Magnolia Petroleum Co.

(In Oklahoma, Kansas and North and East Central Texas)

March 12, same schedule as Prairie, excepting that Magnolia is paying $1.10 for all oil below 28° gravity.

Magnolia's Mid-Continent schedule also applies in Panola and Iatan, Tex. Districts, effective March 12.

Corsicana heavy.....$1.00

Carter Oil Co.

(Oklahoma and Kansas)

March 14, same schedule as Prairie.

PANHANDLE, TEXAS

Humble Oil & Refining Co.

Effective March 14

Hutchinson, and Carson Counties.....$0.95

Gray and Wheeler Counties:

28-28.9	$ .80	37-37.9	$ .98
29-29.9	.82	38-38.9	1.00
30-30.9	.84	39-39.9	1.02
31-31.9	.86	40-40.9	1.04
32-32.9	.88	41-41.9	1.06
33-33.9	.90	42-42.9	1.08
34-34.9	.92	43-43.9	1.10
35-35.9	.94	44 and above	1.12
36-36.9	.96		

WEST TEXAS

(Crane, Upton and Crockett Counties)

Humble Oil & Refining Co.

Effective March 14

Below 26	$ .70	31-31.9	$ .82
26-26.9	.72	32-32.9	.84
27-27.9	.74	33-33.9	.86
28-28.9	.76	34-34.9	.88
29-29.9	.78	35-35.9	.90
30-30.9	.80	36 and above	.92

NORTH LOUISIANA—ARKANSAS FIELDS

***Prices of Standard Oil Co. of Louisiana**

Caddo, Homer, Haynesville, Bull Bayou, El Dorado, Crichton and De Soto

Effective Mar. 14, 1927

Below 28	$1.10	40-40.9	$1.36
28-28.9	1.12	41-41.9	1.38
29-29.9	1.14	42-42.9	1.40
30-30.9	1.16	43-43.9	1.42
31-31.9	1.18	44-44.9	1.44
32-32.9	1.20	45-45.9	1.46
33-33.9	1.22	46-46.9	1.48
34-34.9	1.24	47-47.9	1.50
35-35.9	1.26	48-48.9	1.52
36-36.9	1.28	49-49.9	1.54
37-37.9	1.30	50-50.9	1.56
38-38.9	1.32	51-51.9	1.58
39-39.9	1.34	52 and above	1.60

Smackover, below 24	$1.00
do 24 and above	1.25
Bellevue	1.25
Cotton Valley	1.00
**Urania, La	1.00
†East El Dorado	1.00

**Posted by Louisiana Oil Refining Corp.

†Posted by Magnolia Petroleum Co.

STEPHENS, ARKANSAS

Atlantic Oil Producing Co. and Louisiana Oil Refining Corp.

Below 28	$1.00	30-30.9	1.06
28-28.9	1.02	31-31.9	1.08
29-29.9	1.04	32 and above	1.10

GULF COASTAL

Posted by Humble Oil & Refining Co.

Effective March 14

Grades A	$1.20	29-29.9	$1.25
Grades B:		30-30.9	1.27
Below 25	1.15	31-31.9	1.29
25-25.9	1.17	32-32.9	1.31
26-26.9	1.19	33-33.9	1.33
27-27.9	1.21	34-34.9	1.35
28-28.9	1.23	35 and above	1.37

Fields classified as A and B are Spindletop, Goose Creek, Hull, Liberty, Sour Lake, West Columbia, Orange, Boling and Pierce Junction. All other fields are Grades A only.

California Crude Oil Price Cut, Tanker Rates Go Down

LOS ANGELES, CAL., April 1

EFFECTIVE this morning the Standard of California announced the long looked for reduction in prices of California crudes, the cuts ranging from 1 cent to $1.38, according to gravity. Heavy grades, without gasoline content, from 14 to 19.9 gravity, were not cut.

Seal Beach crude, which averages about 26 gravity, is now worth 92 cents, against a former price of $1.46. Forty-two gravity was slashed $1.38 a barrel, reducing the price slightly more than half. But there is very little 42 gravity oil produced in California.

The announcement accompanying the price reduction stated in part: "This is the first change in crude prices in California since March 11, 1926, and is the result not only of an over supply of crude oil, but of reduced prices for gasoline since that time, averaging about 6 cents a gallon."

The statement issued last week with reference to the threatened overproduction at Seal Beach indicated that prices would be cut, if no steps were taken to slow down or reduce drilling activity in the Seal Beach town lot area. An effort was made to bring about an agreement either to shut down drilling wells or reduce the activity, but without result.

The crude cut announcement made no mention of fuel oil or other products, and it is generally supposed that the Standard will stick to its posted price of $1 a barrel on fuel in southern California, although this product can be purchased in large lots for export at prices ranging from 75 cents a barrel and up. The export movement continues healthy, and no weakness has appeared since the announcement of the crude price reduction.

To meet the competition of Pan American Petroleum Co. and Gilmore Oil Co., Standard, effective March 31, announced a further 2-cent cut in service station price on gasoline in the Los Angeles area, retaining the 4-cent differential. The Shell, California Petroleum, Union and other marketing companies immediately met this last reduction, but the reduction only applies in the territory served by the Pan American, extending from Santa Barbara to San Diego.

The service station price of gasoline continues at 17 cents in San Francisco, which territory is not affected by the Pan American's low price.

The announcement of a further reduction in the price of gasoline in southern California apparently had no effect on other products, as the cut in both crude and gasoline had already been discounted.

A Sun tanker arrived at Los Angeles harbor this week from east coast, and was offered for charter with no takers. It was reported that the clean tanker could be chartered at $1 a barrel for trip to east coast. Some two weeks ago a Richfield tanker was chartered for a trip to east coast, carrying fuel oil.

Natural gasoline is weak. One contract over a period was signed this week at 8½ cents, which is a reduction of about 2 cents in a few weeks. It is reported that there is some spot stuff on the market at almost any price, ranging

Purchasers, in All Fields (in Effect, Apr. 4, 1927)

GULF COASTAL

Prices of The Texas Co. (Effective March 14)

Grades A	$1.20	*Grades B	$1.15
‡Grades B (light crude):			
35-35.9	$1.37	38-38.9	$1.43
36-36.9	1.39	39-39.9	1.45
37-37.9	1.41	40 and above	1.47

*Grades B include all heavy crudes which do not meet tests for Grades A or for Gulf Coast light crude.

‡The Texas Co.'s gravity and price schedule on oil below 35° is same as Humble's postings on Grades B.

ROCKY MOUNTAIN FIELDS

Prices of Ohio Oil Co. and Midwest Refining Co.
(Salt Creek prices effective March 12)

‡Salt Creek	29-29.9	$1.14
" "	30-30.9	1.16
" "	31-31.9	1.18
" "	32-32.9	1.20
" "	33-33.9	1.22
" "	34-34.9	1.24
" "	35-35.9	1.26
" "	36-36.9	1.28
" "	37 and above	1.30
Elk Basin		1.33
Grass Creek light		1.33
Big Muddy		$1.23
Lance Creek		1.35
Rock Creek		1.23
Mule Creek		1.30
Rex Lake		1.10
‡Osage		1.35
‡Cat Creek, Mont.		1.35
Sunburst, Mont.		1.32
‡Hogback, N. Mex.		1.38
Artesia, N. Mex.		1.00

‡Posted by Midwest Refining Co. Midwest also buys Grass Creek light and Elk Basin.

The Texas Co. buys Salt Creek and Big Muddy crude.

CALIFORNIA

Standard Oil Co. of California

Gravity	Signal Hill Seal Beach Huntington Beach	Inglewood Torrance	Whittier La Habra	Newhall, McKittrick, Kern River	Olinda-Brea Canon, Richfield	Athens-Rosecrans Dominguez	Monte-bello	Coyote Hills	Midway Sunset Santa Fe Springs	Midway Sunset Buen & Elk Hills	Midway Sunset Vista Hills	Midway Sunset Lost Hills	Coalinga	Wheeler Ridge	Santa Maria	Ventura
14-14.9	$ .85	$ .85	$ .85	$ .75	$ .85	.....	$ .85	$ .85	.....	$ .75	$ .75	$ .75	$ .75	$ .75	$ .85	$ .85
15-15.9	.85	.85	.85	.75	.85	.....	.85	.85	.....	.75	.75	.75	.75	.75	.85	.85
16-16.9	.85	.85	.85	.75	.85	.....	.85	.85	.....	.75	.75	.75	.75	.75	.85	.85
17-17.9	.85	.85	.85	.75	.85	.....	.85	.85	.....	.75	.75	.75	.75	.75	.85	.85
18-18.9	.85	.85	.85	.75	.85	.....	.85	.85	.....	.75	.75	.75	.75	.75	.85	.85
19-19.9	.85	.85	.85	.75	.85	.....	.85	.85	.....	.75	.75	.75	.75	.75	.85	.85
20-20.9	.85	.85	.85	.....	.85	.....	.85	.85	.....	.77	.77	.76	.78	.90	.90	
21-21.9	.86	.86	.85	.....	.86	.....	.85	.86	.....	.79	.79	.77	.81	.97	.97	
22-22.9	.87	.87	.85	.....	.87	.....	.85	.87	.....	.81	.81	.78	.85	1.04	1.04	
23-23.9	.88	.88	.....	.....	.88	.....	.85	.88	.....	.83	.83	.79	.89	1.11	1.11	
24-24.9	.89	.89	.....	.....	.89	$ .89	.85	.89	$ .85	.85	.85	.80	.93	1.18	1.18	
25-25.9	.90	.90	.....	.....	.90	.90	.86	.90	.85	.87	.87	.81	.97	1.25	1.25	
26-26.9	.92	.92	.....	.....	.92	.92	.87	.91	.85	.89	.89	.83	1.01	1.32	1.32	
27-27.9	.94	.94	.....	.....	.94	.94	.88	.92	.85	.91	.91	.85	1.05	1.39	1.39	
28-28.9	.96	.96	.....	.....	.96	.96	.89	.93	.86	.93	.93	.87	.....	1.46	1.46	
29-29.9	.98	.....	.....	.....	.98	.98	.90	.94	.87	.96	.96	.89	.....	1.53	1.53	
30-30.9	1.00	.....	.....	.....	1.00	1.00	.91	.95	.88	.99	.99	.91	.....	1.60	1.60	
31-31.9	1.03	.....	.....	.....	.....	1.03	.....	.....	.89	1.02	1.02	.93	.....	.....	1.67	
32-32.9	1.06	.....	.....	.....	.....	1.06	.....	.....	.91	1.05	1.05	.95	.....	.....	1.73	
33-33.9	.....	.....	.....	.....	.....	1.09	.....	.....	.93	1.08	1.08	.97	.....	.....	1.79	
34-34.9	.....	.....	.....	.....	.....	1.12	.....	.....	.95	.....	1.11	.99	.....	.....	1.85	
35-35.9	.....	.....	.....	.....	.....	1.15	.....	.....	.97	.....	.....	1.01	.....	.....	1.92	
36-36.9	.....	.....	.....	.....	.....	1.18	.....	.....	.99	.....	.....	.....	.....	.....	.....	
37-37.9	.....	.....	.....	.....	.....	1.21	.....	.....	1.01	.....	.....	.....	.....	.....	.....	
38-38.9	.....	.....	.....	.....	.....	1.24	.....	.....	1.03	.....	.....	.....	.....	.....	.....	
39-39.9	.....	.....	.....	.....	.....	1.27	.....	.....	1.06	.....	.....	.....	.....	.....	.....	
40-40.9	.....	.....	.....	.....	.....	1.30	.....	.....	1.09	.....	.....	.....	.....	.....	.....	
41-41.9	.....	.....	.....	.....	.....	1.33	.....	.....	1.12	.....	.....	.....	.....	.....	.....	
42-42.9	.....	.....	.....	.....	.....	1.36	.....	.....	1.15	.....	.....	.....	.....	.....	.....	

Santa Maria and Ventura Posted by Union Oil Co.

*Union Oil Co. also purchases Long Beach Crude and is maintaining the same gravity and price schedule in that field as the Standard maintains in Signal Hill and Huntington Beach fields. The Union also buys and pays the same prices as the Standard in the Rosecrans-Dominguez fields, on gravities ranging from 14 degrees to and including 24.9 degrees and in Santa Fe Springs, on gravities ranging from 20 to and including 23.9 degrees.

REFINERS' and COMPOUNDERS' SUPPLIES

Following are the average market prices for the week on materials used by refiners and compounders f. o. b. shipping point as effective this date.

Refiners' Supplies

	Apr. 4	Mar. 28
Soda Ash light 58% bags.cwt.	$1.32½	$1.32½
Silicate of Soda 60 deg. drums.....cwt.	-$1.65	-$1.65
Sal Soda wks.....	.90- 1.10	.90- 1.10
Caustic Soda 76% solid.cwt.	- 3.00	- 3.00
Chloride of Lime.....cwt. works.....	- 2.00	- 2.00
Sulphuric Acid 60 deg. tank cars f. o. b. shipping point.....per ton	10.50-11.00	10.50-11.00
Liquid Chlorine tank cars works.....lb.	- .04	- .04

Compounders' Supplies (Open Market)

Vegetable Oils—		
Linseed carloads spot....lb.	10.3	10.2
April.....	10.3	10.2
Tanks, spot.....	9.5	9.4
*Soya Bean Tanks, Coast.lb.	.09½	.09½
Castor Oil—		
No. 1 Carlots, Bbls.....	-.14½	-.14½
No. 3 Carlots, Bbls.....	-.14	-.14
Animal Oils—		
English Degras.....	-.05¾	-.05¾
Domestic Degras, bbls., carloads.....lb.	-.04¾	-.04¾
Oleic Acid—		
Dist. Bbls.....lb.	.09½-.09¾	.09½-.09¾
Saponified Bbls.....lb.	.09¾-.10	.09¾-.10
Lard Oils—		
Prime Winter Strained. 2 to 1½ffa.40-45c.t.lb.	.14¾	.14¾
Extra Winter Strained. 2 to 4½ffa.40-45c.t.lb.	.13½	.13½
Extra..... 4 to 5 ffa.40-45c.t.lb.	.12¼	.12¼
Extra No.1. 7 to 10 ffa.40-50c.t.lb.	.11¼	.11¼
No. 1.....15 to 18 ffa.40-45c.t.lb.	.10¾	.10¾
No. 2.....22 to 23 ffa.40-45c.t.lb.	.10¼	.10¼
Prime Edible Tallow under 1¼ffa. 40-45c.t.N.Y.....lb.	-.08½	-.08½
Tallow acidless.....lb.	-.10½	-.10½
Lard Stearine.....lb.	-.15½	-.15½
Oleo Stearine.....lb.	-.10½	-.10½
Neatsfoot Oil—		
Pure.....bbls.-lb.	.12¾	.12¾
Extra.....do lb.	.11¼	.11¼
No. 1.....bbls.-lb.	.10¾	.10¾
Cold pressed.....lb.	.15¾	.15¾
Fish Oils—		
Menhaden Oil Light pressed.....gal.	-.60	-.60
White.....gal.	-.66	-.66
Yellow bleached.....gal.	-.64	-.64
Whale, extra winter bleached.....gal.	-.82	-.82
Naval Stores—		
Turpentine, N. Y.....gal.	.69	.73
Turpentine†.....gal.	.63	.67
Rosin, B. N. Y.....bbl.	9.80	9.50
Rosin, F. N. Y.....bbl.	11.00	11.50
Rosin, B†.....bbl.	8.25	7.75
Rosin, F†.....bbl.	9.40	10.00
Rosin Oil 1st run.....gal.	.65	.65
Rosin Oil 2nd run.....gal.	.70	.70
Pine Tar—		
Kiln Burnt.....bbl.	16.00	16.00
Retort.....bbl.	16.00	16.00
Alcohol—Denatured—		
Formula 5 Bbls.....gal.	- .38	- .39
Drums.....gal.	- .31	- .33

†Savannah, Ga., market.
*Nominal.

from 5 cents up. One Mid-Continent manufacturer this week offered 25 tank cars of Grade A natural gasoline at 10½ cents, laid down in Los Angeles. This meant only 3 cents in Mid-Continent as freight and evaporation is figured at 7½ cents a gallon. No purchaser was found.

LOS ANGELES, March 31.—Shipments of petroleum products out of Los Angeles harbor to points outside Pacific Coast trade territory are showing an almost steady decline, the greatest decline being in gasoline and crude.

During week ending March 26, the movement of all products averaged only 137,239 barrels against an average of 218,680 barrels in February. The movement for the week mentioned included 3580 barrels of crude, 686,414 barrels of fuel, 148,027 barrels of gasoline, 50,286 barrels of Diesel and 72,371 barrels of tops. The gasoline went to Baltimore and Philadelphia.

OIL STOCKS AND FINANCES

National Petroleum News

Prairie Reports Largest Income Since 1920

CLEVELAND, Mar. 31.—Prairie Oil & Gas Co.'s profits after all charges and reserves was more than 12 per cent larger in 1926 than in 1925. This increase reflects the more stable crude oil markets last year.

Prairie's net was $15,962,367 or $6.63 a share on the $25 stock. The 1925 net was $14,181,532 of $5.90 a share. Last year's profits were the largest earned by the Prairie since 1920.

The balance sheet of Dec. 31 shows an increase of more than $9,000,000 in merchandise (mostly crude) inventory during last year, a gain in accounts receivable but a shrinkage in cash and securities held. There was $2,000,000 gain in current liabilities.

Condensed income statements for the last two years compare:

	1926	1925
Net after all charges	$ 15,962,367	$ 14,181,532
Dividends	3,606,456	2,400,000
Surplus	$ 12,355,911	$ 11,781,532

Balance sheets of Dec. 31, 1926 and 1925, compare:

ASSETS	1926	1925
Real estate	$ 684,498	$ 608,533
Personal property*	43,371,337	34,344,478
Bills Receivable	260,000	260,000
Accounts Receivable	19,974,179	19,102,068
Securities	21,987,103	23,500,754
Merchandise	79,261,239	72,090,554
Cash	2,433,273	4,517,709
Total	$167,971,629	$154,424,096
LIABILITIES		
Capital stock	$ 60,000,000	$ 60,000,000
Bills, accts. receivable	16,852,166	14,948,709
Stock due employes	157,300	40,125
Surplus	90,962,163	79,435,262
Total	$167,971,629	$154,424,096

*After depreciation and depletion.

McDonald Retires as S. O. Kansas Head

CLEVELAND, March 31.—J. C. McDonald retired as president of the Standard Oil Co. of Kansas at the annual meeting at Neodesha, Kans., and was succeeded by A. S. Hopkins, a director who hitherto has not been an officer. E. A. Metcalf was elected to the board to fill the seat vacated by Mr. McDonald.

E. A. Warren was elected vice-president to succeed Thomas Black and A. L. Morrison was elected secretary and treasurer to fill the vacancy caused by Mr. Warren's promotion. P. H. Rhode was elected assistant secretary and assistant treasurer to succeed Mr. Morrison.

Standard of Kansas netted $163,203 last year, or 51 cents a $25 share, compared with $494,296 or $1.54 a share in 1925. No dividends were paid either year. Balance sheets of Dec. 31, 1926 and 1925, compare:

ASSETS	1926	1925
Plant	$ 6,195,350	$ 6,279,816
Cash	326,793	215,272
Securities	1,487,951	1,488,106
Acc'ts receivable	2,019,897	1,591,393
Inventory	1,510,272	1,881,799
Total	$11,540,263	$11,456,386
LIABILITIES		
Capital stock	$ 8,000,000	$ 8,000,000
Accounts payable	546,996	878,422
Depreciation res	2,356,330	2,104,230
Surplus	636,937	473,734
Total	$11,540,263	$11,456,386

Independent Oil Issues $6,500,000 Debentures

CLEVELAND, March 31.—Independent Oil & Gas Co. has issued $6,500,000 12-year 6 per cent convertible debentures through a banking syndicate headed by Marshall Field, Glore, Ward & Co. and Kelley, Drayton & Converse. The price was 99 and interest to yield 6.10 per cent.

The debentures are convertible into common stock at $35 a share on or before March 15, 1928, and at $1.50 a share more each succeeding year until maturity, the price for the last year being $50 a share. Proceeds from these debentures are to be used to retire $2,400,000 6½ per cent notes May 1, to develop new properties and for other corporate purposes, President E. H. Moore announced.

Mr. Moore said the company's production on Feb. 25 averaged 12,012 barrels, compared with 7290 barrels daily average in all of 1926 and 6646 for all of 1925. The company owned or had interest in 12,162 acres in Kansas, Oklahoma and Texas with 402 oil wells and nine gas wells. It also was interested in 121,900 undeveloped acres in those states.

The company, Mr. Moore wrote bankers, had 255 miles of pipe lines, operated 805 tank cars, has 1,000,000 barrels of tankage and a 5000-barrel refinery. It also owned all of the capital stock of the Tri-County Gas Co. which owns 181 miles of gas pipe lines serving eight Oklahoma towns, and numerous oil companies for field operations.

California Petroleum Corp.—All directors and officers re-elected.

Illinois Pipe Line Co. Profits Are Lower

CLEVELAND, March 31.—Indicated net income of Illinois Pipe Line Co. in 1926 was $2,990,423, or $14.95 a $100 share compared with $3,845,554 or $19.22 a share in 1925. Dec. 31 balance sheet shows decrease in pipe line investment last year but an increase in other investments. Current assets at end of 1926 were almost 5 to 1 over current liabilities. Book value of the stock Dec. 31 was $132.03 a share, an increase of $2.95 a share over value Dec. 31, 1925. Balance sheets of Dec. 31 of last two years follow:

ASSETS	1926	1925
Pipe line	$30,010,587	$31,273,428
Other investments	4,253,373	2,726,000
Cash, accounts Rec	3,706,176	3,340,492
Material, Supplies	879,488	892,499
Miscellaneous debits, etc.	164,831	432,542
Total	$39,014,455	$38,664,961
LIABILITIES		
Capital stock	$20,000,000	$20,000,000
Tax liabilities	782,436	885,539
Depreciation reserve	11,675,342	11,645,291
Accounts payable	109,071	273,164
Unadjusted credits	40,863	44,646
Surplus	6,406,743	5,816,321
Total	$39,014,455	$38,664,961

Borne Scrymser Co. Nets Less Than Dividends

CLEVELAND, March 31.—Balance sheet of Borne Scrymser Co. of Dec. 31 indicates net earnings of $139,266 in 1926 or $60,734 less than the year's dividends. The indicated net profits were $3.48 a share on the new $25 stock, equal to $13.92 a share on the old $100 stock. The 1925 net was $22.99 a $100 share.

The balance sheet shows an increase of $142,430 in net property valuation. Current assets Dec. 31 were $1,168,406 and current liabilities $37,517, leaving net working capital of $1,130,889. Book value of the stock Dec. 31 was $39.22 a share.

Balance sheets of Dec. 31, 1926 and 1925, compare:

ASSETS	1926	1925
Property	$ 711,948	$ 550,581
Depreciation	205,997	187,060
Net property	$ 505,951	$ 363,521
Merchandise	402,445	471,431
Notes, acc'ts rec	158,038	197,348
Cash	97,268	126,881
Other investments	510,158	610,158
Prepaid items	498	664
Total	$1,674,358	$1,770,003
LIABILITIES		
Capital stock	$1,000,000	$1,000,000
Accounts payable	36,796	61,576
Accrued expenses	721	756
Reserves	67,903	78,000
Surplus	568,938	629,671
Total	$1,674,358	$1,770,003

Transactions In Oil Shares on New York Stock Exchange

1926 High	1926 Low	1927 High	1927 Low		Listed Capital	Par Value	Stocks	Div. Rate	Last Paid	Transactions Week Ended April 2 Sales	First	High	Low	Last	Ch'ge
82⅛	24¼	37⅝	29	(sh)	814,800	N.P.	Amerada Corp	50cQ	Jan. 31, 27	16,400	31¼	31½	†29	29⅛	— 2⅜
74	39⅜	60½	35⅛	(sh)	200,000	N.P.	American Republics	.....	.....	700	44⅜	44⅞	44	44½	— ¼
59½	44¾	50¼	48	$	56,000,000	$ 25	Associated Oil	50cQ	Mar. 25, 27	100	48	48	48	48	0
128⅜	97	117⅜	107		50,000,000	100	Atlantic Refining	.....	June 16, 24	7,800	111⅜	111¾	108	109½	— 1¼
120	115½	118	115½		20,000,000	100	do pfd	$1¾Q	Feb. 1, 27	600	118	118	117¾	118	0
33⅛	23⅜	35⅛	27		25,000,000	25	Barnsdall Corp. A	62½cQ	Apr. 5, 27	30,900	30¾	30¼	28¾	28¾	— 2⅜
29⅛	22½	32¾	25		3,715,775	25	do B	62½cQ	Apr. 5, 27	1,600	29	29	27	27	— 1
38⅛	29¾	32⅞	25½		47,709,175	25	California Petroleum	50cQ	Mar. 1, 27	23,500	28¼	28¾	†25½	25½	— 2½
94¾	50	96¾	77½		23,721,200	100	General Asphalt	.....	.....	40,000	84½	85	79⅝	81⅜	— 3⅜
140½	94⅞	144⅞	120		7,294,000	100	do pfd	$1¾Q	Mar. 1, 27	400	125	125	121	125	—13
72	50¼	124¾	60⅛		25,000,000	100	Houston Oil	.....	.....	62,300	106¼	107	98⅜	104¼	— 1¾
84	19⅝	32¾	21½	(sh)	500,000	N.P.	Independent Oil & Gas	25cQ	Jan. 17, 27	28,700	24⅞	24⅞	†x21½	21¾	— 3
15¾	7¾	11⅜	7⅝	$	8,283,960	$ 10	Indian Refining	.....	Dec. 15, 20	2,200	9⅞	9⅞	9¾	9⅝	— ¾
12⅛	8	10⅞	7⅝		4,546,490	10	do ctfs	.....	.....	3,500	9½	9¾	9	9½	+ ⅜
104	90	112	102		2,296,400	100	do pfd	.....	Dec. 15, 21	200	109¾	110	109¾	110	+ 2
¾	⅛	.....	.....		1,644,760	10	Kansas & Gulf	.....	.....	.....	.....	.....	.....	.....	.....
24½	19⅜	30⅛	20¾	(sh)	3,983,629	N.P.	Lago Oil & Transport	.....	.....	76,500	30⅝	*30¾	27¾	28½	0
19⅞	12	18⅜	13	(sh)	1,134,238	N.Pi.	Louisiana Oil Refining	.....	.....	17,300	13⅝	13¾	†13	13⅛	— ⅜
98	93	97	92½	$	4,000,000	$100	do pfd	$1¾Q	Feb. 15, 27	.....	.....	.....	.....	.....	.....
28⅞	16½	22¾	16¾	(sh)	330,000	N.P.	Maracaibo Oi	.....	.....	1,700	16¾	17½	16½	16½	— ⅝
63⅜	49¼	58½	45½	(sh)	1,928,408	N.P.	Marland Oil Co	$1Q	Dec. 31, 26	154,900	50¾	50⅜	†45½	46⅜	— 3¾
.....	.....	.....	.....	$	45,942,800	$100	Mexican Petroleum	$5Q	Jan. 20, 27	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....		12,000,000	100	do pfd	$2Q	Jan. 20, 27	.....	.....	.....	.....	.....	.....
13¾	6	9¼	6⅝	(sh)	945,939	N.P.	Mexican Seaboard	.....	Nov. 15, 24	1,500	7¼	7¼	6⅝	7	— ½
87	27½	39¾	32½	(sh)	1,357,800	N.P.	Mid-Continent Petroleum	.....	Aug. 1, 23	32,200	34⅛	34¾	†x32⅜	32¼	— ⅜
104¼	90	105	102¾	$	6,718,000	$100	do pfd	$1¾Q	Mar. 1, 27	200	102⅞	102⅞	102½	102½	— 1
2½	⅜	3¼	1⅜		25,415,540	10	Middle States	.....	July 1, 23	2,300	2⅛	2½	2⅛	2⅛	0
1⅜	⅜	2¼	1⅛		4,384,680	...	do ctfs	.....	.....	3,300	1½	1¾	1½	1⅝	+ ¾
2¼	1	1⅞	1¼	(sh)	3,500,000	N.P.	Pacific Oil	.....	Jan. 20, 26	1,000	1⅜	1⅜	† 1¼	1⅜	0
76½	56⅛	65⅞	59⅜	$	48,307,400	$ 50	Pan American P. & T	$1.50Q	Jan. 20, 27	1,800	64⅞	64⅞	†x59⅜	60	— 1½
78⅜	56⅞	66⅜	60		100,546,350	50	do B	$1.50Q	Jan. 20, 27	45,000	64⅞	64¾	†60	60½	— 2¾
46	30	37⅞	19	(sh)	400,000	N.P.	Pan American Western B	50cQ	Jan. 30, 27	36,400	28½	28½	†19	21½	— 7
32	4½	18⅞	8⅜	(sh)	198,770	N.P.	Panhandle P. & R	.....	.....	3,800	11	11	† 8⅜	8½	— 2
99⅜	51	81¾	68½	$	2,935,200	$100	do pfd	.....	July 2, 23	.....	.....	.....	.....	.....	.....
57⅜	40	60¼	45⅛	(sh)	2,406,796	N.P.	Phillips Petroleum	75cQ	Apr. 1, 27	265,200	50½	50½	†45⅛	46⅛	— 3⅜
1⅞	½	¾	½	$	20,622,925	$ 25	Pierce Oil Corp	.....	.....	11,600	½	¾	½	⅝	+ ⅛
27⅛	11⅛	18	13½		15,000,000	100	do pfd	.....	Feb. 1, 22	700	15	* 18	15	16½	+ 3
7	2¼	3⅞	2½	(sh)	2,500,000	N.P.	Pierce Petroleum	.....	.....	24,400	2½	3⅝	2½	2⅝	+ ⅛
20¾	11	32	16¾	$	11,467,850	$ 50	Producers & Refiners	.....	Sept. 15, 23	18,700	23¾	25½	21⅝	24	+ ¾
41¾	30¾	50	36⅛		2,845,350	50	do pfd	.....	May 1, 25	150	41	43¼	41	43⅜	— 1⅝
81	25¼	83½	27¼		75,959,250	25	Pure Oil Co	87½cQ	Mar. 1, 27	32,400	29	29⅝	27⅝	27¾	— 1⅝
112¾	106	113	111⅜		13,000,000	100	do 8% pfd	$2Q	Apr. 1, 27	200	112	112	112	112	— ½
57⅜	47⅜	58	49	(sh)	646,502	13.40	Royal Dutch, N. Y. shares	$1.33⅓	Jan. 28, 27	2,200	50¾	50⅜	†49	49¼	— 1⅜
40⅝	40½	47⅞	44½	(sh)	86,962	£2	Shell Transport & T	96.7c	Jan. 17, 27	.....	.....	.....	.....	.....	.....
31	24	31¾	27½	(sh)	10,000,000	N.P.	Shell Union Oil	35cQ	Mar. 31, 27	14,700	28⅞	29¼	†27½	27¾	— 1
114	103	108⅞	107½	$	18,350,400	$100	do pfd	$1½Q	Feb. 15, 27	100	108⅞	108⅝	108⅞	108⅞	0
28⅝	15⅜	22¾	17¾		7,208,080	10	Simms Petroleum	37½cQ	Apr. 1, 27	10,000	19¾	19¼	18	18	— 1
24⅞	16¾	22⅜	17	(sh)	4,500,782	N.P.	Sinclair Consolidated	.....	May 31, 24	39,800	18½	18⅝	†17	17	— 1½
99½	90	103¾	97	$	17,210,000	$100	do pfd	$2Q	Feb. 15, 27	400	99¾	99¾	99	99	— ½
87⅛	26⅝	37⅜	28		27,396,590	25	Skelly Oil Co	50cQ	Mar. 15, 27	40,000	31¾	31⅜	†28	28½	— 2⅛
63⅝	52⅜	60¾	54¼	(sh)	13,016,434	N.P.	S. O. California	62½cQ	Mar. 15, 27	44,600	58⅜	58½	†54¼	54½	— 2¾
46⅜	37⅜	41⅜	36⅛	$	517,397,550	$ 25	S. O. New Jersey	25cQ	Mar. 15, 27	49,600	37⅛	37⅜	†36⅛	36¾	— 1
119⅛	115	116¾	114⅝		206,958,970	100	do pfd	$1¾Q	Mar. 15, 27	.....	.....	.....	.....	.....	.....
33¾	32½	34⅞	30¼		419,023,275	25	S. O. New York	40cQ	Mar. 15, 27	59,100	21⅜	31¼	†30¾	30¼	— ⅞
41⅝	30⅛	34⅞	30	(sh)	1,105,384	N.P.	Sun Oil	25cQ	Mar. 15, 27	1,700	20½	22	30¾	32½	+ 1½
5¼	1	6½	3¾	(sh)	1,121,368	N.P.	Superior Oil Corp	.....	Dec. 20, 20	12,200	4½	4⅝	† 3¾	4	— ½
58	48	58	51½	$	16,328,725	$ 25	The Texas Co	75cQ	Dec. 30, 26	100	51¼	51¾	†51¼	51¾	— 2¼
57⅞	53⅛	58	47¼		141,467,575	25	The Texas Corp	75cQ	Apr. 1, 27	28,100	48⅝	48⅞	†47¼	47¾	— 1¾
19½	12	16⅜	13		8,380,340	10	Texas Pacific Coal & Oil	15cQ	Mar. 31, 27	22,800	13¾	13¾	13	13⅛	+ ⅛
59¼	37	29⅜	24¾	(sh)	2,157,991	N.P.	Tide Water Oil Co	37½cQ	Mar. 31, 27	1,000	25	26	†24¾	25⅜	+ ⅜
103	87¼	89½	87½	$	20,705,100	$100	do 5% pfd	$1.25Q	Feb. 15, 27	500	88½	88½	88	88	0
5½	3	5	4	(sh)	3,742,029	N.P.	Transcontinental Oil	.....	.....	22,100	4⅜	4¾	† 4	4	— ¼
58⅜	37¼	56⅛	40⅜	$	40,690,650	$ 25	Union Oil of California	50cQ	Feb. 10, 27	47,400	44¾	45	†40⅝	41¾	— 3⅛
120¾	84½	102	94		30,734,000	100	Union Tank Car Co	$1¾Q	Mar. 1, 27	1,900	99	100½	99	99	— 2
29¾	25⅛	27½	24¼	(sh)	490,000	N.P.	White Eagle Oil & Refining	50cQ	Jan. 20, 27	5,200	25	25¾	†x24¼	24½	— ⅜

*New High †New Low xEx-Dividend Total Sales 1,346,050

Cleveland Stock Market

April 1

	Par	Bid	Asked	Last Sale
Canfield Oil Co	$100	.....	.....	110
do pfd	100	.....	100	100
Fred G. Clark Co	10	2½	.....	2½
National Refining Co	25	35⅜	37½	37⅜
do pfd	100	130¼	.....	130
Paragon Refining Co	25	6⅛	6⅞	7
do pfd	100	66½	72	70

xEx-dividend

OIL DIVIDENDS

	Amt.	Payable	Stock of Record
Eureka Pipe Line q	$1	May 2	Apr. 16
Lago Oil & Trans. q	75c	May 1	Apr. 11

N. Y. Standard Buys Tankers

NEW YORK, April 2.—Standard Oil Co. of New York has bought three tankships, each of about 10,000 tons carrying capacity. Two, the Sunoil and the Miller County, were bought from the Sun Oil Co. The third, the Agwimoon, was bought from the Atlantic Gulf & West Indies Steamship Co. The company is converting its case cargo boat, the Tiger, into a tankship.

PITTSBURGH STOCK EXCHANGE

1926 High	1926 Low	1927 High	1927 Low	Par Value	Stocks	Transactions Week Ended Apr. 1 Sales	First	High	Low	Last	Ch'ge
8¼	6⅝	.....	.....	N.P.	Andes Petroleum	.....	.....	.....	.....	.....	.....
8½	5¾	8¼	7⅛	$ 10	Arkansas Nat. Gas	2,725	7⅛	7⅛	7	7	— ¼
90½	79¾	91¼	84	100	Columbia Gas	10	86	86	86	86	—1
101¾	93	105	100	100	do pfd	52	105	*105	104¾	104¾	+ ¾
17	12½	15	12	10	Devonian Oil	570	12¼	12½	†12	12¼	— ¼
116½	112	116¼	115	100	Duquesne Lt. 7% pfd.	35	115⅝	115¾	115⅝	115¾	+ ¼
10	5⅛	10¾	6	N.P.	Houston Gulf Gas	3,385	10	10	8½	8⅝	—1⅝
46	39	46¼	37¼	$ 25	Lone Star Gas	3,804	41¼	41¾	41	41¼	+ ⅜
47¾	33⅛	.....	.....	25	Ohio Fuel Corp	.....	.....	.....	.....	.....	.....
47½	42	21⅝	21	....	do ctfs	.....	.....	.....	.....	.....	.....
6¾	5	6	6	....	Ohio Oil & Gas	.....	.....	.....	.....	.....	.....
34	21	21	21	25	Oklahoma Nat. Gas	.....	.....	.....	.....	.....	.....
21	19¼	23	20¼	....	do ctfs	4,746	22	22¾	22	22½	+ ¼
5¾	3⅛	3⅞	3¼	5	Pittsburgh Oil & Gas	.....	.....	.....	.....	.....	.....
10	7½	8	7½	10	Salt Creek Cons	.....	.....	.....	.....	.....	.....
27	8	26½	21	10	Tidal Osage	365	24	24	24	24	0
45	40	43	41	N.P.	Waverly Oil Wks. "A"	20	41½	42	41½	42	— ⅞

PITTSBURGH CURB MARKET

1926 High	1926 Low	1927 High	1927 Low	Par Value	Stocks	Transactions Week Ended Apr. 1 Sales	First	High	Low	Last	Ch'ge
3⅜	2½	3½	2¾	$ 5	Colombia Synd	.....	.....	.....	.....	.....	.....
.20	.06	.18	.18	5	Duquesne Oil	.....	.....	.....	.....	.....	.....
22	22	.....	.....	10	Forest Oil	.....	.....	.....	.....	.....	.....
91½	85	94	93	25	Gulf Oil Corp	.....	.....	.....	.....	.....	.....
79	79	94½	93½	100	Houston Gulf Gas pfd	.....	.....	.....	.....	.....	.....
12	7½	10¾	7¾	N.P.	Leonard Oil & Dev	.....	.....	.....	.....	.....	.....
1⅝	1⅝	.....	.....	N.P.	Mountain & Gulf	.....	.....	.....	.....	.....	.....
30¼	29	32	31¼	$ 25	Oklahoma Gas	100	32	†32	32	32	+ ¾
2	.15	2.70	1.30	10	Omar Oil & Gas	1,800	1.75	1.75	1.50	1.60	+ .05
2	1¼	.....	.....	5	Pittsburgh Oil Dev	.....	.....	.....	.....	.....	.....
33½	20	31	26	10	Plymouth Oil	620	28	28	26	26	—5
7	3	6	5½	5	States Oil	.....	.....	.....	.....	.....	.....
3½	2	3⅝	2⅝	1	Texon Oil & Land	1,320	2½	2⅝	2⅜	2½	— ⅛
25¾	8	23¾	20½	10	Tidal Osage (non-vtg)	.....	.....	.....	.....	.....	.....

*New High Record †New Low Record xEx-Dividend ‡Ex-Rights

Standard Oil Stock Traded in New York

1926 High	1926 Low	1927 High	1927 Low	Outstanding Capital	Par Value	Stocks	Div. Rate	Last Paid	Transactions Week Ended April 1 Sales	First	High	Low	Last	Ch'ge
21	16¾	21⅝	18⅝	£ 4,000,000	£ 1	Anglo-American Oil	60¾cS.A.	May 27, 26	1,900	19¼	19¼	†18⅝	18⅝	— ⅛
20¼	16½	20½	17⅜	.....	£ 1	do ctfs. non-voting	.....	.....	1,100	18½	18½	†17⅞	18	— ⅛
19	16	20½	18¾	.....	£ 1	do voting ctfs	.....	.....	200	18¾	18¾	18¾	18¾	0
2¾	.75	1¾	1	(sh) 500,000	N.P.	Atlantic Lobos	.....	.....	.....	.....	.....	.....	.....	.....
5	2¾	4¼	2¾	$ 10,000,000	$ 10	do pfd	.....	.....	.....	.....	.....	.....	.....	.....
75	65	69	56	1,000,000	25	Borne Scrymser	$1S.A.	Apr. 15, 27	.....	.....	.....	.....	.....	.....
59½	42	50¾	45	10,000,000	50	Buckeye Pipe Line	$1Q	Mar 15, 27	800	50¾	50¾	47½	48¾	— 1¼
82½	65	82¾	76½	3,000,000	25	Chesenrough Mfg	$1Q	Mar. 31, 27	.....	.....	.....	.....	.....	.....
25⅞	17⅛	22⅝	19	35,051,920	10	Continental Oil	30cQ	Mar. 15, 27	9,400	19½	19½	19	19	— ½
17	13½	.....	.....	1,500,000	25	Crescent Pipe Line	.....	Sept. 15, 23	.....	.....	.....	.....	.....	.....
137	102	137	89	3,000,000	100	Cumberland Pipe Line	$2Q	Mar. 15, 27	220	93	93½	90½	90½	0
63¾	43	52	47	5,000,000	100	Eureka Pipe Line	$1Q	Feb. 1, 27	50	52	* 52	52	52	+ 1
92½	9⅛	13½	10¼	2,000,000	100	Galena Signal Oil	.....	June 30, 25	300	10½	10½	10¼	10¼	— ¼
94½	85	59¾	42	4,000,000	100	do new pfd	.....	June 30, 26	40	45	45	†42	42	— 4½
97½	40	60⅛	49	2,000,000	100	do old pfd	.....	June 30, 26	40	50	50	†49	49	+ 2½
99⅝	52	62¾	54	72,916,666	25	Humble Oil & Refining	30cQ	Apr. 1, 27	20,200	58¾	60	56¾	57½	— 1⅛
144½	125⅝	141	123¾	20,000,000	100	Illinois Pipe Line	$6S.A.	Dec. 15, 26	550	137½	137½	136¾	136¾	— 1½
39¾	32½	47	37¼	(sh) 6,491,852	N.P.	Imperial of Canada	25cQ	Mar. 1, 27	28,300	42¾	* 47	42¾	44¾	+ 1⅝
70	54¼	69½	61	$ 5,000,000	$ 50	Indiana Pipe Line	$1Q	Feb. 15, 27	200	67½	67½	66⅜	66⅜	— 1⅛
35¾	28¾	34⅞	30½	(sh) 7,118,138	N.P.	International Petroleum	25c	Nov. 15, 26	30,600	31	33	30¾	30⅝	— ⅛
20¾	12½	14⅝	13½	$ 6,362,500	$12½	National Transit Co	25cQ	Mar. 15, 27	11,600	14⅜	* 14⅞	14⅜	14½	+ ⅛
51½	27⅛	36	31¼	5,000,000	100	New York Transit	.....	July 15, 26	50	31½	31½	31½	31½	+ ½
80½	64	80	70	4,000,000	100	Northern Pipe Line	$3S.A.	Jan. 1, 27	.....	.....	.....	.....	.....	.....
67¾	55¾	64¼	56⅞	60,000,000	25	Ohio Oil Co	50cQ	Mar. 15, 27	2,300	58¾	58¾	†56⅞	57	— 1⅛
24¾	15	19	16½	10,000,000	25	Penn Mex Fuel	.....	May 21, 25	.....	.....	.....	.....	.....	.....
60¼	48	55½	47¼	60,000,000	25	Prairie Oil & Gas	50cQ	Nov. 30, 26	14,300	48⅝	49½	†47¼	47¾	— 1¼
137½	122¼	151	132	81,000,000	100	Prairie Pipe Line	$2Q	Jan. 31, 27	1,650	149¾	149¾	x147¾	147¾	— 1½
220	184½	201½	182	4,000,000	100	Solar Refining	$5S.A.	Dec. 20, 26	190	186	188	†182	182	— 4
27	21	27¼	15½	5,000,000	50	Southern Pipe Line	.....	Mar. 1, 26	1,000	18½	19½	18¾	19	+ ¼
50	34½	41½	35	20,000,000	25	South Penn Oil	50cQ	Mar. 31, 27	1,600	36⅝	37	36¼	37	+ 1½
57	49	64¾	55½	3,500,000	100	South West Pa. Pipe Lines	$1Q	Apr. 1, 27	50	61½	61½	61½	61½	— ½
70½	60½	74¾	66½	226,322,708	25	S. O. Indiana	62½cQ	Mar. 15, 27	30,800	67⅝	67¾	66¼	66¾	— ¼
36½	16½	20⅞	15⅝	8,000,000	25	S. O. Kansas	.....	June 16, 24	4,000	17½	18⅞	17⅝	17⅝	0
134¾	108	122¼	112	16,929,809	25	S. O. Kentucky	$1Q	Mar. 31, 27	2,800	114½	114¾	†112	113	— 1½
51⅜	42	49½	46	4,518,600	25	S. O. Nebraska	63cQ	Mar. 21, 27	600	46⅛	46¾	46	46	0
39	34¼	41	37¼	.....	25	S. O. New Jersey w.i.	.....	.....	.....	.....	.....	.....	.....	.....
372	288	354	294	14,000,000	100	S. O. Ohio	$2½Q	Apr. 1, 27	90	310	310	294	294	—14
120½	116½	122	117¼	7,000,000	100	do pfd	$1¾Q	Mar. 1, 27	30	119	119	119	119	+ ½
23	15½	16¾	14½	861,466	25	Swan Finch Co	.....	Nov. 1, 19	.....	.....	.....	.....	.....	.....
109¾	90¼	110½	95⅛	62,199,950	25	Vacuum Oil	50cQ	Mar. 19, 27	27,300	105⅛	109½	104½	105½	+ ⅝

NEW YORK BONDS

Week Ending Apr. 1	High	Low	Last	Ch'ge
Amer. Rep. Deb. 6s	99¾	99⅝	99¾	+ ⅛
Assoc. Oil gold 6s	103	102¾	103	+ ⅛
Atlantic Refg. deb. 5s	102⅜	101½	101⅝	— ⅛
Barnsdall Corp. 6s	102¾	99⅜	99½	—2⅜
Barnsdall Corp. 6s ex war.	92⅜	91⅛	91¼	—1
Cal. Petrol. sf 6½s	103⅜	103⅛	103⅛	— ⅛
Cal. Petrol. 5½s	100¾	99¾	100	— ¼
Cal. Petrol. 5s	96½	95	95	— ⅞
Empire Gas & Fuel 7½s	108½	107¾	108	— ¼
Empire Gas & Fuel 6½s	104	103½	103¾	— ¼
Gen. Asphalt 6s	108⅞	106⅝	108	0
Gen. Petroleum 5s	101	100¾	101	+ ¼
Humble Oil & Refg. 5½s	102⅝	102¼	102⅜	0
Mid-Cont. Pet. 6½s	104⅞	104¾	104¾	— ¼
Pan-Amer. P & T 7s	105	105	105	0
Pan-Amer. P & T 6s	104⅞	103¾	104	0
Pan-Amer. P & T 6s	97¾	93½	93½	—3⅝
Pierce Oil deb 8s	100	100	100	0
Prod. & Refnrs. 8s	110½	110½	110½	0
Simms Pet. cvt 6s	100⅞	99⅝	100	—1½
Sinclair Con. Oil Col. 7s	100¾	97⅛	99⅜	—1¼
Sinclair Con. Oil Con. 6½s	98⅞	96½	97	—2
Sinclair Con. Oil 6s	100	99⅞	100	0
Sinclair Crude Oil 6s	100⅞	100⅝	100⅞	+ ⅛
Sinclair Pipe Line sf 5s	94½	94⅛	94¼	0
Standard Oil of N. Y. 4½s	96	95½	96	+ ⅛
Standard Oil N. J. deb. 5s	102½	101⅞	102	— ¼
Superior Oil 7s	101	100½	100¾	+ ⅛
Union Oil of Cal. 6s A	108¾	108¾	108¾	0
Union Oil of Cal. 1st 5s	101⅝	101⅝	101⅝	+ ⅛
Union of Cal. 5s C	99	99	99	0

NEW YORK CURB BONDS

Week Ending Apr. 1	High	Low	Last	Ch'ge
Beacon Oil 6s '36	101	101	101	— ¼
Cities Serv. 6s '66	101⅜	101	101⅛	0
Cities Serv. 5s	91¾	91¾	91¾	0
Cities Serv. 7s "D" '66	123½	122¾	122¾	— ¾
Galena S O 7s '20	92½	92½	92½	+1
Gulf Oil 5s '37	100⅜	100	100	— ⅝
Indepen. Oil 6½s '31	103¼	103⅛	103⅛	— ⅛
Indepen. Oil 6s wi	99	99	99	0
Pure Oil 6½s '33	103⅝	103½	103⅝	+ ⅛
Richfield Oil 6s wi '41	98	91⅝	92	—6
Skelly Oil 5s	98½	98½	98½	0
S. O. N. Y. 6½s '33	105	104⅝	104⅝	— ⅜
Sun Oil 5½s '39	100⅜	100	100⅛	+ ⅛
Trans. Cont. Oil 7s '30	99⅛	98¾	98⅞	— ⅛
United Oil Prod. 8s '31	88⅞	85⅛	85⅛	—4⅛
Valvoline 7s '37	106¼	106¼	106¼	0

Empire Gas & Fuel Co.—$450,000 convertible 15-year 7½ per cent gold bonds, series A, dated May 1, 1922, have been called for redemption at 105 and accrued interest May 2.

New York Curb Market

1926 High	1926 Low	1927 High	1927 Low	Par Value	Stocks	Transactions Week Ended April 1 Sales	First	High	Low	Last	Ch'ge
6¾	.45	2⅞	.82	$5	Amer. Con. Oilfields	17,200	.90	94	85	90	0
14½	4	7½	4	N.P.	Amer. Maracaibo	46,400	5	6¼	4⅞	5⅛	+ ⅛
8¾	5¼	8¾	7	$10	Arkansas Nat. Gas..	1,800	7⅛	7⅛	7	7⅛	0
20¼	14⅛	20½	15¼	N.P.	Beacon Oil	600	16¼	17	16¼	16½	+ ⅛
85¼	60	97	20½	N.P.	British American	1,200	.....	* 97	25⅛	25⅛	— 7⅛
28⅜	9¼	28¾	17	25c	Carib Syndicate	15,600	21	21¼	†17	18	— 9
.....	.....	26	18	....	do ctfs. of deposit	400	20⅞	20⅞	†18	18⅛	— 3⅛
51	37½	58¾	40¼	$20	Cities Service	45,600	51½	51¾	51¼	51¼	— ⅜
92½	82¾	92¼	87	100	do pfd	5,400	90⅛	90¼	90	90	— ⅛
8¾	7¾	8½	7¾	10	do pref. B	700	8	8¼	8	8¼	+ ⅛
25¼	19	29¼	25½	10	do bankers' shares	200	25¾	25¾	25¼	25¼	0
3½	1¾	3 1/16	2⅛	$1	Colombia Syndicate	16,300	2 3/16	2⅝	2 3/16	2¼	0
10⅛	8⅛	9½	8⅝	10	Consolidated Royal	400	8⅞	8⅞	8¾	8¾	— ⅛
16	10	14⅞	11⅞	N.P.	Creole Syndicate	103,700	13⅞	14⅜	13⅞	13⅜	— ⅜
7¾	1⅛	3	1½	N.P.	Crown Central	2,200	1¾	1¾	† 1½	1¾	0
8½	½	12	4¾	....	Darby Petroleum	.....	.....	.....	.....	.....	.....
.....	.....	11⅞	8¼	....	do trust ctfs	.....	.....	.....	.....	.....	.....
4	1¾	2¾	1¾	N.P.	Derby Oil & Refining	100	1⅝	1⅝	1⅝	1⅝	— ⅛
19	13	12	10	N.P.	do pfd	100	11	11	11	11	0
7½	2¼	5¾	1¾	N.P.	Gibson Oil	14,400	1¾	2¼	1¾	1⅞	+ ⅛
2	.63	1¾	81	N.P.	Gilliland ctfs	200	90	90	90	90	—10
98	82	96½	90	$25	Gulf Oil Corp	5,100	92	92	†90	90	— 3⅛
3¾	1	2¼	1¼	N.P.	Kirby Petroleum	1,300	1⅞	1⅞	1⅞	1⅞	0
12¼	5¾	10⅞	7⅝	N.P.	Leonard Oil & Dev.	4,500	8⅛	8½	7¾	7¾	— ⅛
27	20	27½	24	N.P.	Lion Oil & Refg	2,000	25¼	26	x 24⅜	25¼	— ¼
46	31	46½	37	$25	Lone Star Gas	3,100	41½	41½	41	41¾	+ ⅜
2¾	2	2⅞	1¼	1	Magdalena Synd	4,500	1⅝	1⅝	† 1¼	1¼	— ⅛
5½	1⅞	8	1½	10	Mexican-Panuco	2,300	1⅞	2⅛	1⅞	1⅞	0
1¾	1¼	1½	1¼	1	Mountain & Gulf	300	1⅜	1⅜	x 1⅜	1⅜	0
26	23	26¾	24½	10	Mountain Producers	4,400	24½	24½	24⅜	24⅜	+ ⅛
6¾	5	5⅞	4⅞	5	New Bradford	1,000	5	5	† 4⅞	5	0
11¾	2	6¼	5¼	10	New England Fuel	.....	.....	.....	.....	.....	.....
17	9⅛	18¾	10¾	1	New Mex. & Ariz	1,700	11⅜	11¼	†10¾	11	— ⅛
17	8	11	9	$5	New York Oil	200	.....	9¾	9⅝	9¾	— ⅛
12⅛	8¾	12⅝	11¼	N.P.	North Cent. Texas	200	11¾	11¾	11¾	11¾	0
44¾	38	.....	.....	$25	Ohio Fuel Corp	.....	.....	.....	.....	.....	.....
33	28½	21¼	21¼	....	Okla. Nat. Gas ctfs	.....	.....	.....	.....	.....	.....
10⅛	5⅞	8¾	5¾	N.P.	Pandem	2,300	6¼	6⅝	6⅜	6¼	0
12¼	11¾	12⅛	11⅜	N.P.	Pantapec Oil	13,100	12	12¾	†11⅜	11¾	— ⅛
23¾	.20	.87	26	N.P.	Peer Oil Corp	2,000	31	31	†26	26	— 1
22¾	12	13½	9¾	$10	Pennok Oil	800	9⅞	9⅞	9¾	9¾	0
38	14⅛	24⅜	18	$5	Red Bank Oil	400	19⅜	20	19	19	+ ⅛
80¼	12	15½	7	N.P.	Reiter-Foster	4,500	8	8⅝	† 7	8¼	+ ⅛
27½	22	27½	15½	$25	Richfield Oil	3,200	18½	19	16⅜	16⅜	— 1⅝
7½	4½	7	5	N.P.	Ryan Consolidated	300	.....	5½	5¼	5½	+ ⅛
10	7½	8	7	$10	Salt Creek Cons	100	7	7	† 7	7	— ⅛
36	26⅞	32	29¾	10	Salt Creek Prod	5,600	30	30¾	†29¾	30⅛	+ ⅛
4⅜	1⅜	7	3	5	Savoy Oil	100	4½	4½	4⅛	4⅛	— ⅛
27	7⅝	26½	21	10	Tidal Osage	600	.....	22¾	22⅝	22⅝	— ⅛
25¾	7⅝	23¾	19	10	do non-voting	2,600	.....	20½	19½	19⅝	— ⅛
27	20⅞	23½	17⅜	N.P.	Tide Water Assoc	25,500	18¾	19¼	18¾	18¾	— ⅛
99½	93¾	95¾	92	100	do pfd	1,200	92¼	93	92¼	93	+ ⅛
.....	.....	80	68½	100	Transcont. pfd	175	72	72	71½	72	+ ½
8	4⅛	7¾	5½	5	Venezuelan Petro	2,400	6	6	† 5½	5½	— ⅛
30½	23⅞	27⅞	25½	N.P.	Warner-Quinlan	400	26	26	25½	25½	— 1⅛
36⅛	22	32⅝	22	N.P.	Wilcox Oil & Gas	2,700	24½	25⅛	24	24	— ⅝
9½	4⅜	8	6¼	$1	Woodley Petroleum	900	6¾	6¾	† 6¾	6¾	— ⅛

*New High †New Low xEx-Dividend

Magnolia Crude Runs January-February

HOUSTON, March 31.—Magnolia Petroleum Co., pipeline department, announces from Dallas headquarters the following crude oil runs for February, which are shown in comparison with January:

	January	February
Hewitt-Graham	153,124.55	136,642.67
Healdton	209,384.71	210,759.05
Cushing	225,440.90	211,502.99
Yale	68,280.95	63,037.94
Cement	23,264.85	23,386.45
Duncan	46,866.97	44,572.07
Augusta	45,429.08	42,757.08
Walters-Beaver Creek	8,081.27	8,404.21
Burbank	46,996.47	40,628.40
Wewoka	285,650.12	297,232.51
Bristow	.....	.....
Seminole	508,253.23	727,464.13
Total Okla.-Kans.	1,620,773.10	1,806,387.50
Archer	87,470.70	77,422.23
Burkburnett	75,985.34	71,192.68
Coleman	107.18	172.54
Comanche	22,802.47	19,878.66
Electra	107,557.67	95,920.84
Corsicana Heavy	8,548.12	7,685.67
Corsicana Light	18,100.04	24,189.21
Henrietta	5,468.57	4,929.00
Iatan	.....	10,733.64
Luling	448,586.03	403,698.51
Lytton Springs	56,184.29	48,570.16
Mexia-Wortham	49,490.85	41,886.05
Mirando	156,489.20	126,271.60
Olden	16,189.55	13,681.21
Panhandle	421,794.04	801,965.50
Panola	563.64	267.64
Stephens	12,305.63	9,551.90
Thrall	1,590.90	1,451.39
Gulf Coast	81,525.74	81,191.11
Total Texas	1,520,759.96	1,290,634.54
Haynesville	3,821.41	3,804.90
Bull Bayou	38,659.46	33,195.34
Cotton Valley	34,500.30	35,008.06
Pine Island	39,908.91	37,277.53
Total Louisiana	116,890.08	109,285.83
El Dorado Light	32,343.36	27,762.81
East El Dorado	3,074.71	1,775.64
Smackover	150,778.80	136,747.82
Total Arkansas	186,196.87	166,286.27
GRAND TOTAL	3,444,620.01	3,872,594.14

OKLAHOMA—KANSAS

Report for February		Daily Average
Runs	1,797,983	64,214
Shipments	1,212,390	43,300
Stocks	3,920,813	

TEXAS

Wichita, Wilbarger, Archer	Runs	304,518	10,876
	Shipments	287,973	10,285
Petrolia	Runs	4,929	176
	Shipments	4,929	176
Eastland, Stephens	Runs	43,112	1,540
	Shipments	283,597	10,128

TOTAL STOCKS 679,070 North Cent. Texas Fields

SUMMARY OF ANNUAL REPORTS

CLEVELAND, April 2.—Annual reports have been issued by the following companies, additional details of which will be published in later issues. Net profits and rates of earnings on each common share were:

Company	Net Profit	Per Share	Par Value
S. O. Ohio	$7,407,429	$12.35	$ 25
Skelly Oil Co.	3,660,992	5.20	25
South Penn Oil	3,152,916	3.94	25
Pennok Oil	307,096	2.04	N.P.
Warner Quinlan	572,411	3.58	N.P.
Vacuum Oil	24,133,655	9.65	$ 25
General Asphalt	2,001,991	8.11	100
Okla. Nat'l Gas	2,295,802	8.26	N.P.
Ark. Nat'l Gas	1,113,577	0.68	$ 10
Texas Pacific C & O	1,578,045	1.86	10
Amerada Corp.	4,933,083	6.05	N.P.
Atlantic Refining	7,021,324	11.24	$100
Tidal Osage	2,284,760	3.56	10

THE OIL INDUSTRY EXCHANGE

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We want a capable man of character who is able to sell real grease and lubricating oils. Liberal co-operation—wonderful opportunity for go-getter.

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TRUCK TANK FOR SALE

800-gallon semi-elliptical 4-compartment Heil tank good as new. Will sacrifice at real bargain.

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OIL BUSINESS FOR SALE on railroad siding in Ohio town. Four storage tanks, station, three trucks, 8 garage pumps, 11 country store pumps. Profitable business. Regular customers. Address Box 842.

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Brown Sheet Iron & Steel Co. 116
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Curtis Pneumatic Machinery Co.
Cushing Refg. & Gasoline Co.

Davis Welding & Mfg. Co.
Dawes Electric Sign & Mfg. Co.
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Illinois Glass Co.
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Kewanee Safe Co.
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Linde Air Products Co.
Lubricating Appliance Mfg. Co.
Luce Trunk Co. 111
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National Carbon Co., Inc.
National Checking Co.
National Lead Co.
National Oil Products Co.
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Steiner Oil Co.
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